

Southern Power & Industry

The Industrial and Power Journal of the South and Southwest

SEPTEMBER, 1960



Million KW for Industrial South - - - P. 32



Hot reheat pipe of new 325,000 KW unit No. 5 at Pacific Gas and Electric Company's Pittsburg Power Plant in California, showing line-up of 3 Grinnell Constant Support Hangers.

Grinnell Hangers support piping at Pittsburg Power Plant

Grinnell manufactures a complete line of engineered pipe hangers and supports. Where reactive forces at terminal points must be kept within specified limits, Grinnell Constant Support Hangers are recommended. They are designed to provide an exact supporting force equal to the pipe load throughout the entire range of travel.

When pipe lines are subject to vertical movement and restrictive conditions do not require the use of a constant support type, Grinnell Variable Spring Hangers are recommended. They should be designed to support not less than 85% or more than 120% of the designed load for the total travel.

When necessary to prevent abnormal movement or vibration in pipe lines, Grinnell Sway Braces of the energy-storing, instant-acting, counter force type are available.

Grinnell maintains a staff of trained technicians; provides highly skilled assistance and advice right from the design stage; offers experienced field engineering service. Call on Grinnell next time. Grinnell Co., 277 West Exchange St., Providence 1, R. I.



Closeup of Grinnell Variable Spring Hanger supporting boiler feed pipe.

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Southern Power & Industry

The Industrial and Power Journal of the South and Southwest

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SOUTHERN POWER & INDUSTRY for SEPTEMBER, 1960

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Volume 78

Number 9

anco water treatment

prevents
efficiency
fade-out...
protects equip-
ment against
scale, rust,
corrosion

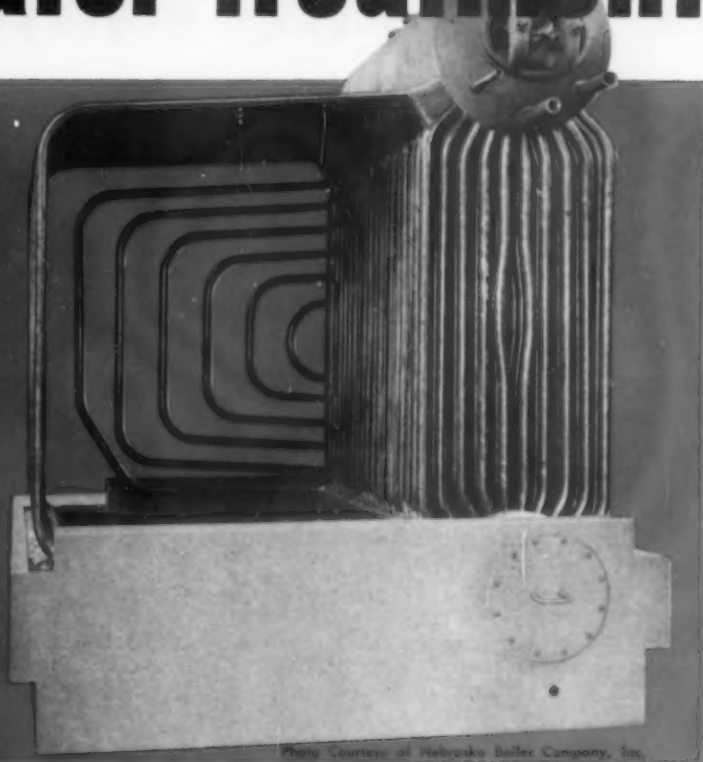


Photo Courtesy of Nebraska Boiler Company, Inc.

The water used in heat exchange systems can be the cause of serious damage if precautions are not taken in time. Impurities in water cause rust, corrosion, scale, and sludge build-up. The best and most economical protection you can give your boilers, water heaters, tanks, condensers, air washers, spray heads, and similar equipment is regular use of Anderson water-treating chemicals.

BRAXON—Liquid formulas remove and prevent scaling and corrosion caused by hard water deposits in boilers; also check foaming and carryover in feedwater.

FLAKO—Dry formula . . . in fine granules or powdered form . . . does basically the same job as Braxon in boilers. Flako also available with anti-foaming agents.

KLEERFLO—Colorless, odorless, non-toxic liquid stops corrosion, scaling in heaters, tanks, pipes, valves, and similar equipment. Kleerflo does not restrict use of water for sanitary or industrial purposes.

ALKASTEEM—The corrosion in steam and condensate lines caused by reaction of bicarbonate decomposition and dissolved carbon dioxide in boiler

feedwater is kept under control by this volatile amine. Circulates by passing from boiler with steam, returning through condensate lines.

SLUDGIT—Designed to dissolve and prevent sludge in fuel oil storage tanks. Liquid treatment removes condensation deposits, and keeps strainers, burners, pipe lines free of corrosion and operating at peak efficiency.

OX-GEM—Sodium sulphite base acts on dissolved oxygen in boiler water to produce non-corrosive sodium sulphate. Assures protection from pitting, corrosion, and accumulation of deposits elsewhere in the system.

COOLEX—Inexpensive but highly effective, formula protects metal surfaces in cooling water systems, air washers and circulating systems against scale, corrosion, and pitting damage.

RUSTEX—Pipe lines, tanks, spray heads, and other components of humidifying systems are kept free of corrosion and scale by this colorless, tasteless formula. Harmless to personnel, it is introduced into system by proportioning pump, or other convenient method.

Write today and request an analysis and recommendation on your plant's water treatment by an Anderson service engineer. There is no cost or obligation to you.

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Facts and Trends

September, 1960

- ◆ **PRECIPITATORS** — A big step toward establishment of standards relating to electrical precipitators was taken recently by the Electrical Precipitator Division of the Industrial Gas Cleaning Institute.

Foremost among the problems to be solved by the group's engineering committees are those dealing with equipment ratings, industry terminology, test methods, standards of performance, and equipment usage.

- ◆ **CREDIT UNIONS** — American credit unions, characterized by some as "do-it-yourself banks," are now exporting their know-how to the underdeveloped countries of the world, according to the latest Business Conditions bulletin of the Alexander Hamilton Institute.

The credit union, an association of people in plant, community or religious group, pool their savings and in turn lend money to members as the need arises. The movement has been extraordinarily successful in the United States as evidenced by the unions' current assets of \$4.8 billion.

- ◆ **STEEL PRODUCTION** — L. S. Hamaker, Assistant Vice-President in Charge of Sales, Republic Steel Corporation, estimates 1960 total U. S. ingot production at 115 million tons. The record year, 117 million tons, occurred in 1955.

It should be noted that 117 million tons in 1955 represented an average operating rate for the year of slightly over 90 per cent. This year a tonnage figure that closely approaches the record will give us an average operation of 77 per cent. Total capacity was 126 million ingot tons in 1955. Today it is just under 150 million tons.

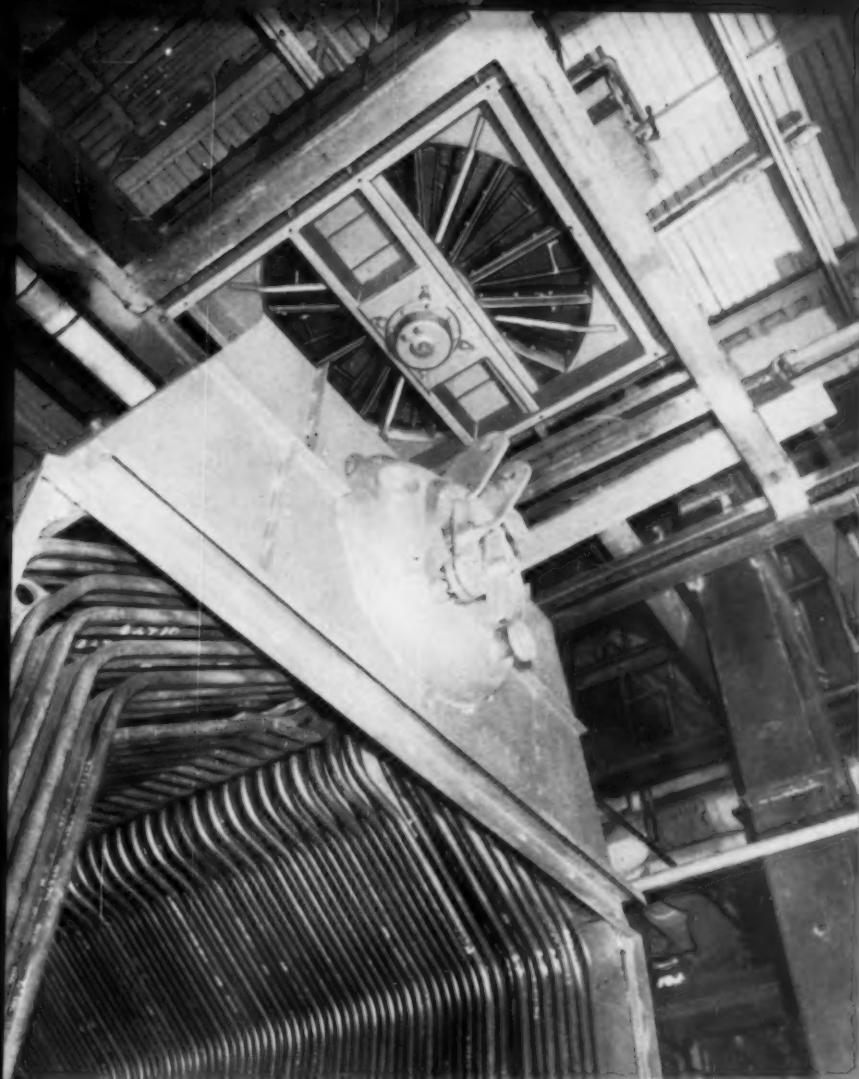
- ◆ **CASTABLE CERAMIC FIBER** — Fiberfrax FC-25 is described in a new technical data sheet by Carborundum. The castable mix is a thick slurry of ceramic fibers and inorganic binder that is used directly from the shipping container.

Continuous use temperature is up to 2300 F. Thermal shock resistance is excellent. Exposure to immediate rise from room temperature to 2100 F does not degrade it in any manner. Suggested uses are combustion chambers, boiler access doors, covers for metallurgical furnaces, vessel linings, furnace and oven wall applications.

- ◆ **COAL INFORMATION** — Heavy reader response to recent offers of BCI technical publications indicates a strong, continuing interest in coal technology within the industry and among consumers and professional consultants.

An important BCI Department function is to develop and distribute information on plant design, utilization equipment, and fuel use and economy. An up-to-date Publications List is always available on request. If you don't have the latest copy, you are probably missing out on some publications of value

(Continued on Page 8)



The Ljungstrom Air Preheater at the B. F. Goodrich Company Shelton Plant is installed directly over the 65,000 lb/hr Wickes boiler. Flue gas leaving the boiler at 615°F passes through the circular rotor, which absorbs the heat and releases it into the incoming air. Preheated combustion air improves combustion, makes fuel burn cleanly. This Package Air Preheater was factory-assembled, and required only 100 manhours to install.

At B. F. Goodrich Co.'s Shelton Plant

Air Preheater boosts combustion air temperature 345°F... gives 6% more thermal efficiency

"Only a Ljungstrom® Air Preheater, with its continuous regenerative principle, could meet our requirements", says A. G. Sandomirsky, Manager of Engineering at the B. F. Goodrich Company, Shelton, Conn., plant. "We produce foam rubber 24 hours a day,

five and six days a week. With an Air Preheater we can meet process steam requirements more economically, and an Air Preheater helped us to justify the installation of high efficiency, high pressure equipment for by-product power generation."

Here's why the Shelton plant meets its requirements best with a Ljungstrom Air Preheater:

1. Ljungstrom is the most efficient heat exchanger you can buy. The Ljungstrom rotor revolves continuously through the flue gas and incoming air, thus absorbing heat and releasing it *from the same surface*. Since the heat doesn't have to pass through anything, each inch of rotor surface is as efficient as one foot of a tubular recuperator.

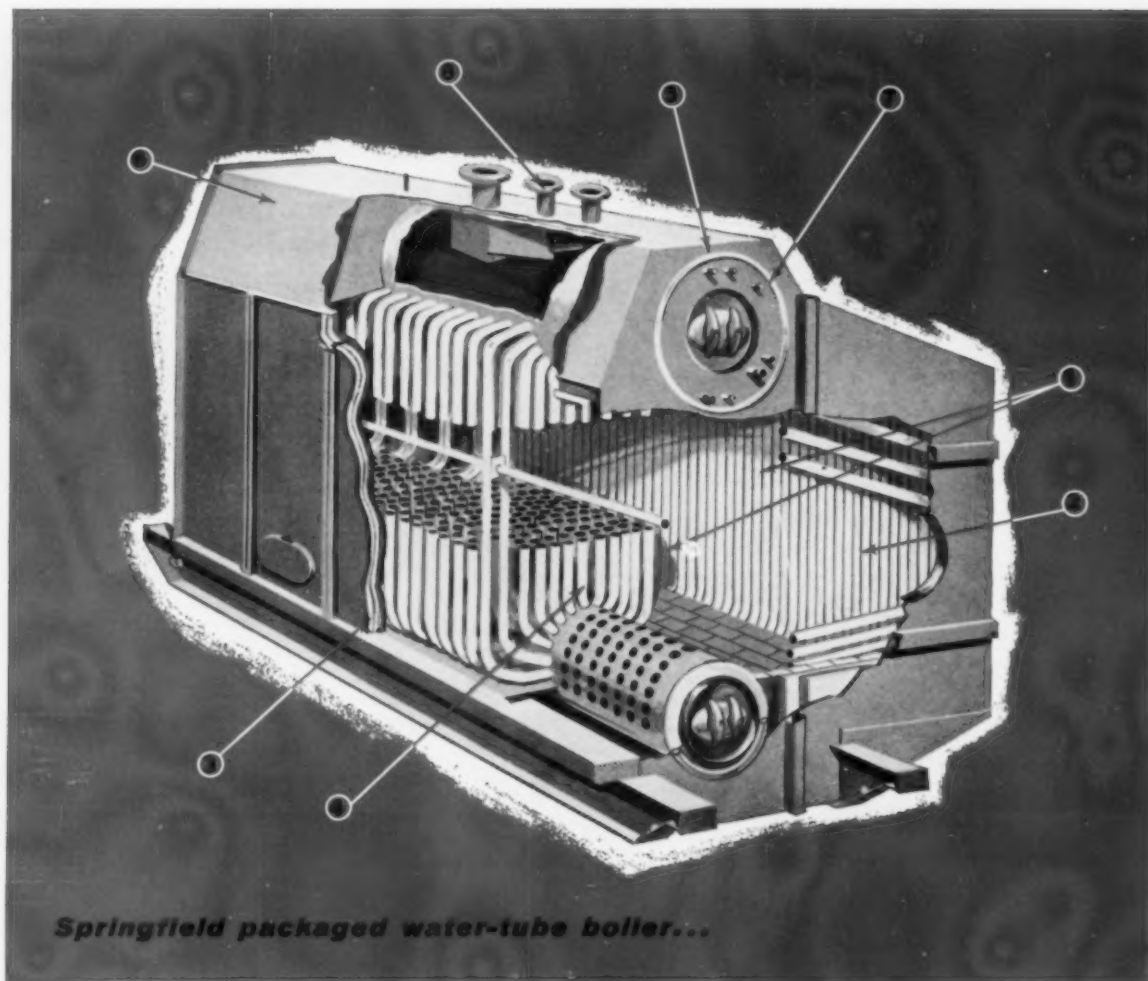
2. Ljungstrom is the most reliable heat exchanger you can buy. All heat exchange elements pass through the entire air and gas streams. The temperature of the elements in the coolest region — where fresh air enters — is actually an average of the gas and air temperatures, so it's consistently higher than the coolest point in a recuperative heat exchanger. Result: no cold spots, less chance of moisture formation.

3. Ljungstrom is easiest to maintain. You can inspect it — and clean it — while it's running. Heat exchange elements are divided into modular baskets that can be replaced individually without disturbing the other elements. You can even reverse the elements if the surface has thinned on one edge, effectively doubling the life of the heat exchange surface.

For more information on the Ljungstrom continuous regenerative principle, or on the Air Preheater that meets your requirements, phone MUrray Hill 2-8250 or write to The Air Preheater Corporation.

THE AIR PREHEATER CORPORATION

60 East 42nd Street, New York 17, N. Y.



THE ONLY ONE WITH ALL TEN

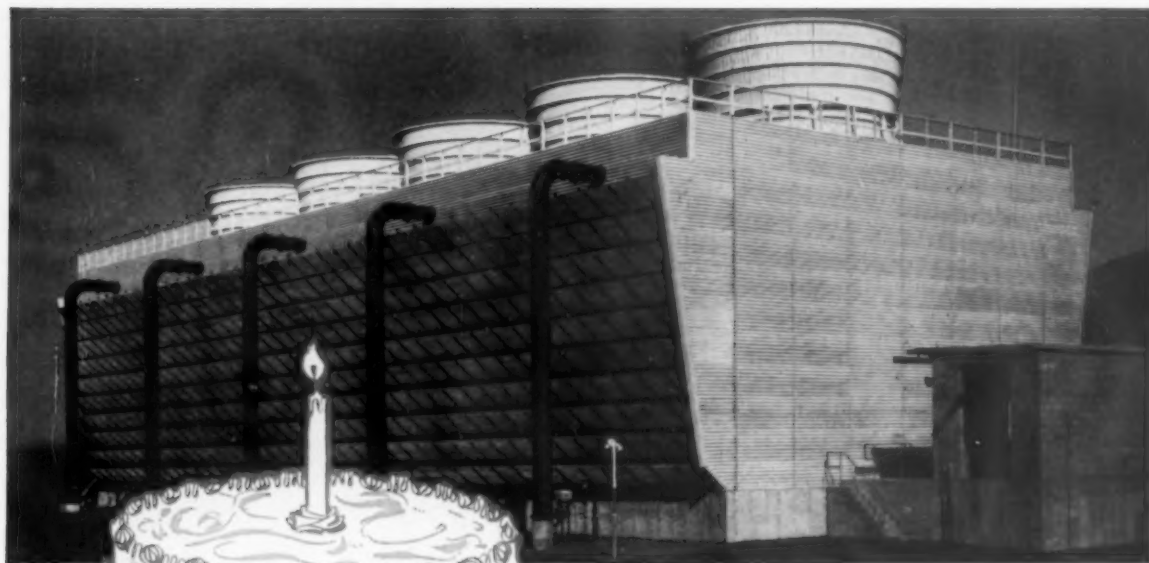
- ① **SOLID WALLS OF WATER.** Tangent tubing in the Springfield provides "solid walls of water" on four sides of the furnace — the maximum heat-absorbing surface that can be applied to these areas.
- ② **SIX-WALL FURNACE COOLING.** Water tubes on all surfaces — top, bottom and four sides — receive the heat. This keeps casing temperature down. A double row of tubes protects the rear wall of the furnace.
- ③ **INSULATED DOUBLE-STEEL CASING.** First applied on packaged boilers by Springfield, this double casing eliminates the need for refractory material in the side walls often necessary in other makes of boilers. Result — no refractory maintenance.
- ④ **MOST EFFECTIVE TUBE ARRANGEMENT.** Staggered tubes in the convection zone direct hot gases into a turbulent pattern for maximum heat transfer. Wide/narrow rows provide full accessibility to every water tube.
- ⑤ **UPPER DRUMHEADS FULLY INSULATED.** Another job-site expense item eliminated. Factory-applied casing covers drumheads. You avoid the cost of field-applied insulation.
- ⑥ **A MANWAY IN EVERY DRUMHEAD.** Springfield stresses operator safety with these extra manways for maintenance, inspection and cleaning — included at no extra cost to you.
- ⑦ **WELDED, GASTIGHT EXPANSION JOINTS.** Another Springfield original and exclusive feature. These unique, fully welded expansion joints absorb both horizontal and vertical expansion stresses — eliminate costly casing maintenance.
- ⑧ **UNIQUE STEAM SEPARATOR.** Developed by Springfield engineers for large central station boilers, then adapted for the "D" type boiler, this steam separator assures continuous dry steam for the life of the boiler.
- ⑨ **TOTAL BOILER SERVICE.** Your boiler investment is safeguarded by service that begins with advanced design and engineering, through factory testing, and carries through to factory-authorized starting service to assure you of maximum operating efficiency.
- ⑩ **TOTAL BOILER EXPERIENCE.** Springfield's 70 years of experience in the water-tube boiler field plus Cleaver-Brooks' leadership in the packaged fire-tube boiler field are back of every boiler produced, every recommendation made. You can contact Cleaver-Brooks, with confidence, for answers to any boiler problem.

We offer packaged water-tube boilers and field-erected units to meet your required capacities.

SPRINGFIELD
BOILER COMPANY

305 E. Keefe Avenue • Milwaukee 12, Wisconsin

Cleaver Brooks®



"MANY HAPPY RETURNS"

This Class 600 Marley Double-Flow cooling tower is one year old . . . and in excellent condition functionally, mechanically and structurally. To assure many more "happy" anniversaries over a long future, The Marley Company will never relax vigilant attention to every detail of its welfare.

Like all Class 600 towers, it will be under the surveillance of a member of the Marley Service Engineering staff, experts on cooling tower operation and maintenance. The results of their services are best attested by supervisory engineers and executives in plants where Class 600 towers are now in service:

ENGINEER, GENERATING STATION:

"We have greatly appreciated the service you have rendered. We had little experience with towers before these four units were put in operation, but we have received much help from your service engineer. Periodic inspection by someone who knows towers relieves us of the worry of letting our towers degenerate. Our supervisors always look forward to these visits and have plenty to discuss with your engineers. Your service has been good and we hope we can continue along this way with the new tower which you will soon be building here."

MANAGER, NUCLEAR PLANT:

"It is our opinion that mutual benefit has been derived from the periodic visits of your service engineer. We know that this service has given us experienced

assistance in operational, mechanical and wood deterioration problems."

REFINERY ENGINEER:

"The Marley service engineer has been a most helpful person to work with and has always been ready to come and help us. His recommendations have been fair, honest and unbiased. That is why we have always accepted them. We would be very disappointed if this service was not available; we have come to depend on it."

MUNICIPAL POWER SUPERINTENDENT:

"From the power plant operator's point of view this is the best service you can give! I will welcome your service engineers at all times. There are many pieces of equipment in a power plant and it is impossible to give each piece of equipment the loving care that the manufacturer would like it to have. Therefore, I welcome an opportunity to discuss, with service engineers, the operation and maintenance of any piece of equipment in the plant. Your service engineers have been most courteous and helpful. I hope that I shall see more of them in the future."

PETRO-CHEMICAL PLANT MANAGER:

"We have found the attention of Marley service engineers beneficial to our cooling tower operation and maintenance. In particular, we appreciate the latest inspection of our towers. This service has been helpful to our preventive maintenance and cooling tower repair programs. We are looking forward to working with your engineer during an early visit."

THE MARLEY COMPANY



KANSAS CITY, MISSOURI

Facts and Trends (Continued)

to you as a consumer, a consultant or a coal industry representative. Write Bituminous Coal Institute, 1130 17th St., N. W., Washington 6, D. C.

- ◆ **PROTECTIVE COATING** — Fiberglas Flake Protective Coating, a spray coating providing a corrosion-resistant surface to metals, wood and concrete, has been developed by Owens-Corning Fiberglas Corporation. Concurrently, a spray gun unit especially designed for applying the new product has been developed by De Vilbiss.

The coating is being marketed initially by a specially selected group of installers. Field tests, begun some time ago, are continuing. It can be utilized in many fields where corrosion is a major problem, such as on chemical and oil storage tanks, jackets for industrial stack insulation, industrial ducting of chemical materials, and concrete sewer lines. Many other applications are foreseen.

- ◆ **EUROPEAN INSTRUMENTATION** — By skipping intermediate stages, European instrumentation techniques are rapidly approaching the engineering methods currently in force in the United States, according to Herman Schaevitz, president of Schaevitz Engineering.

The increasing emphasis toward mass production techniques, the complete dependence upon U. S. testing and production devices, and the willingness to skip intermediate steps in their electronics development, is helping to close the gap between us very rapidly. Within the next five years, the European electronics industry will be capable of pulling even with the U. S. from the standpoint of engineering methods.

- ◆ **LAST HALF?** — Despite its somewhat unsatisfactory beginning, 1960 is still widely expected to be a good year, the National Industrial Conference Board reported in releasing a survey of 210 manufacturers on the business outlook.

Many executives are confident about the second half, basing this attitude on a belief that the economy is healthy, and on a faith in the capacity of their firms to compete. A few firms' expectations, however, tend toward pessimism. Others are unable to find causes leading to improvement. Some of these companies have already curtailed operations, and further curtailment is planned unless orders recover promptly.

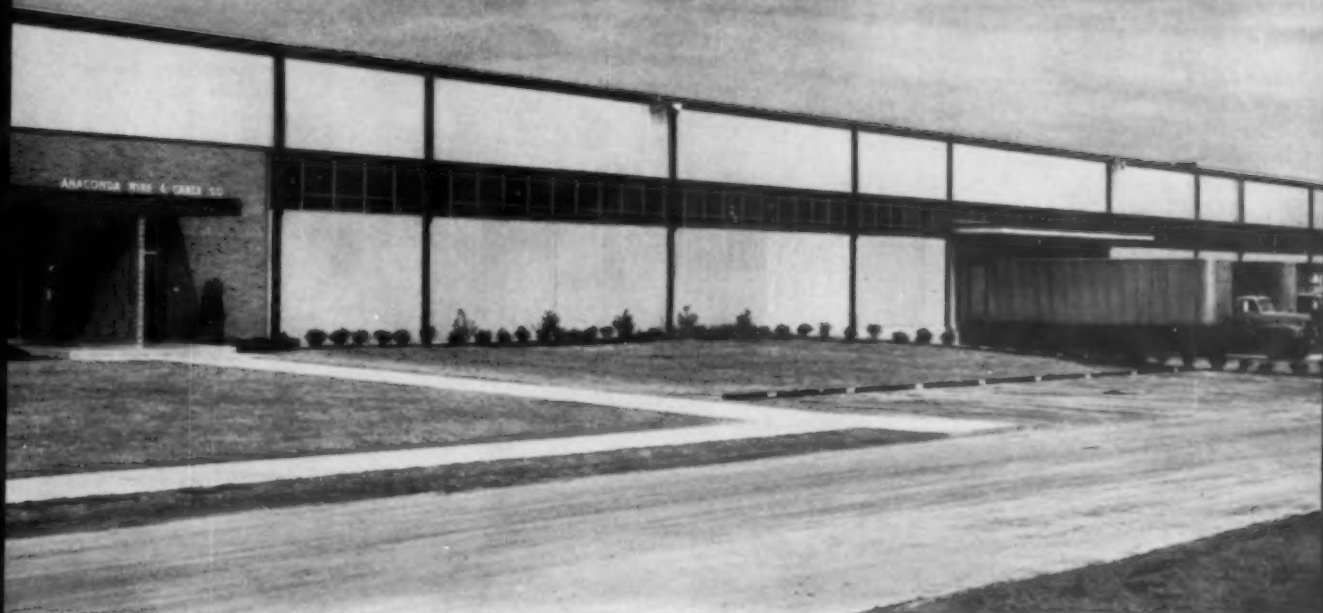
- ◆ **SAFE ACID HANDLING** — Monsanto Chemical Company's Inorganic Chemicals Division has announced the publication of three technical bulletins covering the bulk handling and storage of sulfuric acid and oleum, chlorosulfonic acid, and muriatic acid.

The illustrated bulletins are designed to give technical assistance in setting up safe procedures in the bulk unloading, handling and storage of the materials. Copies are available free from the Inorganic Chemicals Division, Monsanto Chemical Company, 800 North Lindbergh Blvd., St. Louis 66, Mo.

- ◆ **COMPUTERESE**—Do you suspect that such simple English words as address, drum, gate, bit and patch mean more than they used to mean? If not, you'd better brush up on your "computerese," warns Brown Instruments Division of Minneapolis-Honeywell Regulator Company.

Aware of the baffling technical jargon surrounding "electronic brains," the Philadelphia firm has published a pocket size 22-page glossary intended to make computer language more intel-

(Continued on Page 12)



The modern wire and cable plant to serve the dynamic South

We have served the South for many years, and we have been proud to share in this region's unprecedented growth.

Now, this new Anaconda Wire & Cable Company plant will provide the way to even better service — thanks to its modern manufacturing and storage facilities and central location.

In fact, everything in this operation has been designed to give you wire and cable products of highest quality and deliver them to you FAST by truck or rail.

In addition, the complete research and engineering facilities and the varied manufacturing skills of the

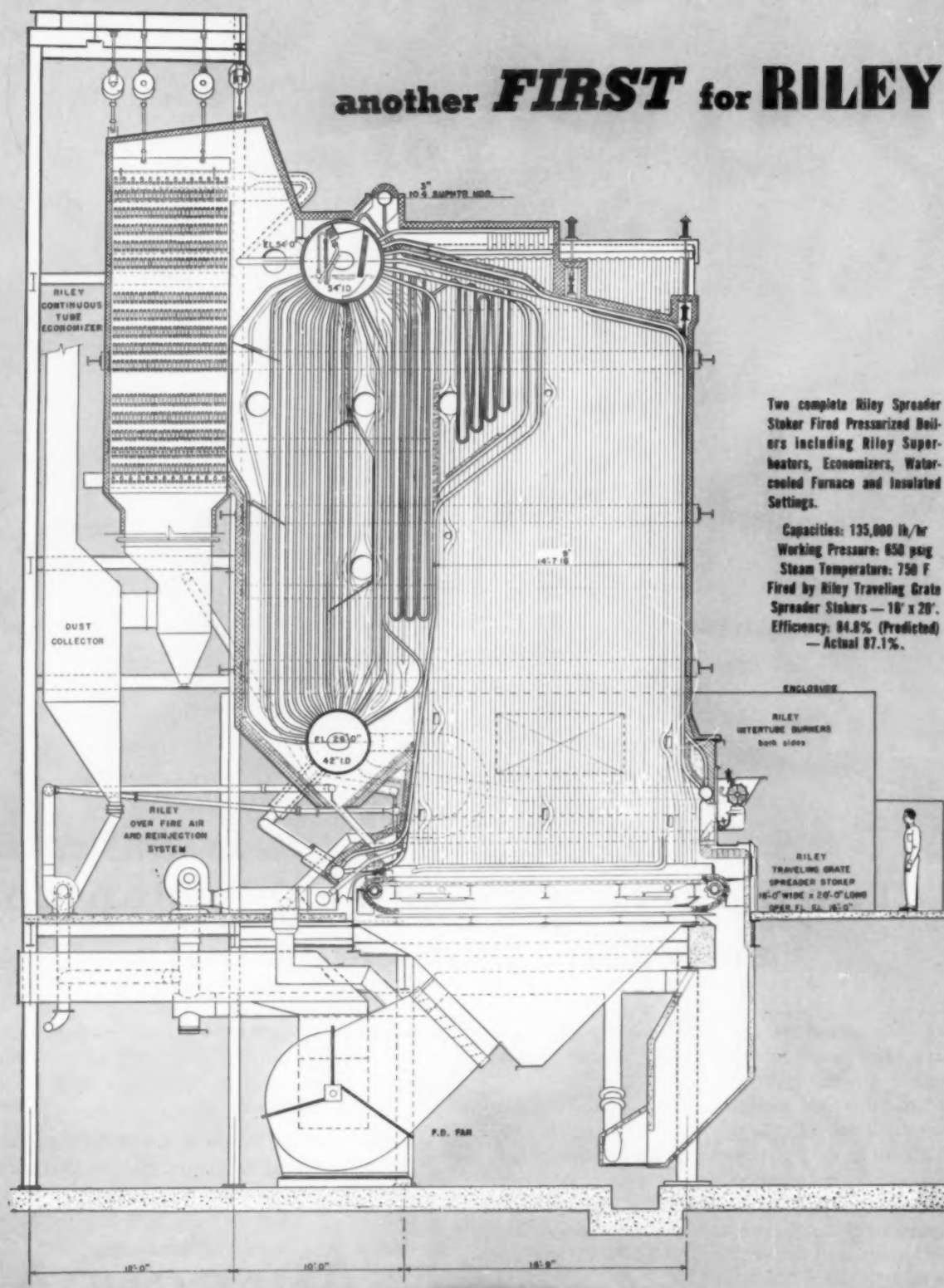
entire Anaconda Wire & Cable Company are available to — and stand behind — the new Watkinsville plant, an expression of Anaconda's pride to be part of the dynamic South.

Anaconda Wire & Cable Company Southern District Sales Offices

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New Orleans, La.—Tampa, Fla.

SEE THE MAN FROM
ANACONDA®
FOR ELECTRICAL WIRE AND CABLE

another **FIRST** for RILEY



Two complete Riley Spreader Stoker Fired Pressurized Boilers including Riley Superheaters, Economizers, Water-cooled Furnace and Insulated Settings.

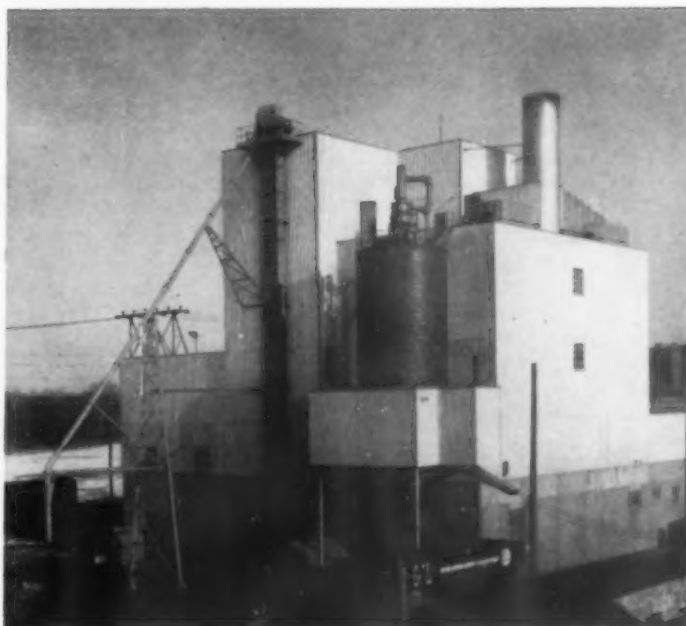
Capacity: 135,000 lb/hr
Working Pressure: 650 psig
Steam Temperature: 750 F
Fired by Riley Traveling Grate Spreader Stokers — 18' x 20'.
Efficiency: 84.8% (Predicted)
— Actual 87.1%.

A Survey Of Your Plant by A Qualified Consulting Engineer Can Show You Ways To Make

... two *PRESSURIZED* **Spreader Stoker Fired Boilers** **perform successfully for Deere & Company**

***The lower operating cost
resulting from pressurized
operation is due to:***

- Elimination of induced draft fan and its maintenance.
- Simplified combustion controls.
- Full furnace wall heat absorption and elimination of cold air filtration into setting.



During the recent decade pressurization of furnaces of industrial and utility type boilers has become a general practice, particularly with gas and oil fired units. A few pressurized pulverized coal fired boilers have been installed. Riley Stoker Corporation has been a leader in the pressurized boiler field. The most recent Riley achievement in boiler furnace pressurization is the *first* successful operation of two 135,000 lb/hr pressurized spreader stoker fired boilers recently installed in the new Central

Power Plant of Deere & Company which serves the three John Deere factories in Moline, Illinois.

Operating efficiencies of up to 87% (over 2% higher than was predicted conservatively by Riley engineers) are attained with this first Riley Pressurized Spreader Stoker Fired Boiler. Here is another fine example of why it pays to rely on the combined experience of Riley boiler and stoker equipment engineers.

For a full written report on the new Deere & Company Central Power Plant prepared by Mr. Howard H. Reisman, Manager, Power Plant Engineering Division, Deere & Company, write to
RILEY STOKER CORPORATION, WORCESTER, MASSACHUSETTS

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RILEY

STEAM GENERATING & FUEL BURNING EQUIPMENT

Surprising Savings In Your Power Costs

Facts and Trends (Continued)

ligible. The booklet, called "Do You Talk Computerese?" defines some 82 terms which the instrument engineers have helped to create in building industrial process computers.

- ◆ **LONG-LIFE POWER UNIT**—An engineer from The Martin Company recently told nuclear experts about a system of producing electrical power safely from tightly sealed pellets of a Strontium-90 compound.

James J. Keenan, of Martin's Nuclear Division in Baltimore, said that heat produced by normal radioactive decay in about a pound of the compound (strontium titanate) could be converted directly into five watts of continuous electrical energy by a series of thermoelectric elements surrounding the fuel capsule. The unit could operate without maintenance or refueling for several years.

- ◆ **LIQUID COOLED BUS**—Lower overall operating costs and decreased space requirements are now possible through the liquid cooling of long runs of high-current isolated phase bus used as generator-to-transformer leads at power stations.

According to I-T-E Circuit Breaker Company, pioneer in the field, liquid cooling can provide extremely important gains in economy and space savings for currents of 10,000 amperes and over, and for runs of 200 feet and over. These findings are the result of extensive laboratory tests using both water and oil as coolants in sections of three phase bus.

- ◆ **PRESSURE VESSELS** — A monumental collection of fundamental information for designers of boilers, pressure vessels and piping systems has been published by The American Society of Mechanical Engineers.

The 700-page volume, titled "Pressure Vessel and Piping Design," was compiled by a committee of experts in the field who searched a vast number of technical papers and reports and selected key writings for inclusion in the book. The ten sections deal with openings, bolted-flanged joints, heads, shells, piping, materials and fabrication, thermal stress and fatigue, loads and supports, external pressure and miscellaneous topics. Copies, priced at \$10.00 each, may be obtained from the Order Department, ASME, 29 West 39th St., New York 18, N. Y.

- ◆ **YOUNG LEADERSHIP** — Look for your government to be increasingly responsive and responsible as more young business men go into political action at the precinct level and for the party of their choice.

The remedy for many political ills, National Chamber President Arthur H. Motley said, will come from young people who are inheriting our political system and our economic problems at a time when they are still free from political cynicisms. He addressed a U. S. Junior C. of C. audience in Oklahoma City.

- ◆ **TIRE PRESSURE** — Should you stop periodically on a long motor trip to bleed air from your tires? Don't bother, say engineers for Goodyear. A slight pressure build-up when the air in a tire becomes warm and expands is normal, Goodyear reports, and the best time to check air pressure is the morning after a long drive, when tires are cool.

Write the editors for additional information on any of the above items.
SOUTHERN POWER & INDUSTRY. 806 Peachtree St., N.E. Atlanta 8, Ga.



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best move
for
satisfactory
dust
collection!**

You put more than 75 years of combined experience at your disposal, when you call in a Buell-Norblo sales engineer. He's qualified and ready to help you design and lay out a complete dust collection system with the right equipment for each application. For literature write Buell Engineering Company, 123 William St., New York 38, N. Y., Northern Blower Division, 6409 Barberton Ave., Cleveland, Ohio.

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ELECTRIC PRECIPITATORS Excel in high efficiency, lowest maintenance record.



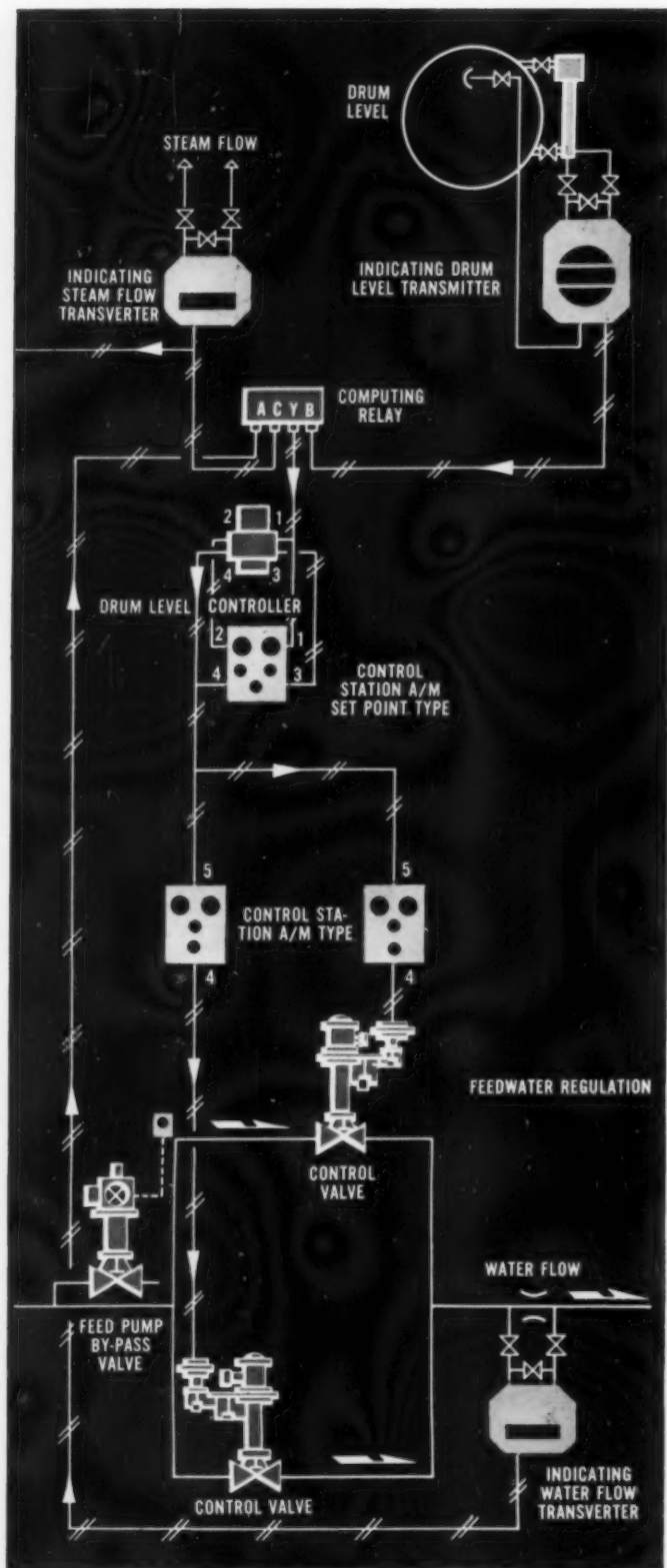
MECHANICAL COLLECTORS "Shave-off" cyclones provide superior performance to ordinary cyclones.



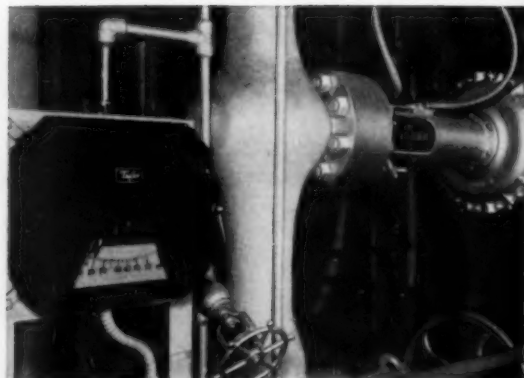
BAG COLLECTORS Automatic cyclic cleaning provides continuous operation at full capacity.



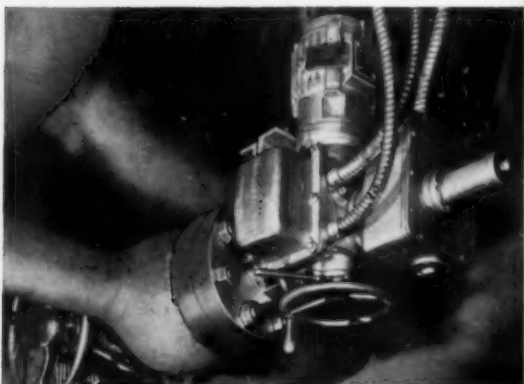
CLASSIFIERS Capacity to keep up with any mill - low power consumption, no moving parts.



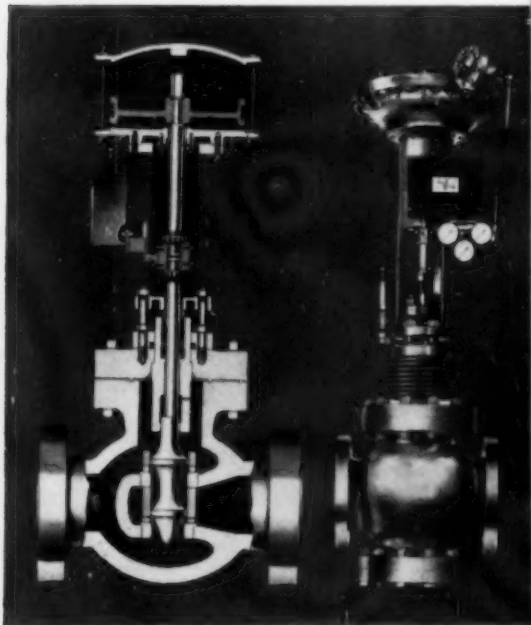
Three influence feedwater regulation is just part of a complete Copes-Vulcan boiler control system installed at a pace-setting utility station. Feed to boiler is modulated by steam flow, feedwater flow, and drum water level.



Copes-Vulcan recirculation control protects boiler feed pumps. When pump discharge falls below a certain level, a diaphragm-operated by-pass valve opens to assure sufficient flow to prevent overheating of the pump.



A feedwater and heater by-pass valve is shown above. Also, a Copes-Vulcan control valve is installed in each of the two main boiler feed lines. These valves handle pressure drops of over 2600 psig without difficulty.



Versatile control valves feature simplicity of design. Piston-type CV-P (left) is ideal for high-duty service. Diaphragm-type CV-D (right) is designed for remote control service. All Copes-Vulcan valves are tailored to the job.

COPES-VULCAN control valves make boiler feedwater systems accurate and trouble-free...

The big load changes of today's boilers put tremendous demands on the accuracy and dependability of feedwater and recirculation systems. Copes-Vulcan systems meet these demands with positive control, positive performance. ■ As long-time specialists in feedwater control, Copes-Vulcan has the experience and design know-how to custom-engineer control valves to rigid specifications. Regardless of high pressure drops, you get close control over full load range, without costly maintenance or replacement. ■ To the dynamic balance of the valves, Copes-Vulcan adds advanced instrumentation. The highly-responsive control system stabilizes water level regardless of changes in load or feed pressure. ■ Bulletin 1038 describes efficient boiler control at a key eastern power station. Write for your copy.

Copes-Vulcan Division, Erie 4,
Pennsylvania.

Copes-Vulcan Division
BLAW-KNOX



the ***SOUTH—SOUTHWEST***

more power . . . more plants . . . more money



Reynolds Aluminum Supply Company's new distribution centers, now under construction in Atlanta and Jacksonville, will be identical to the firm's Louisville plant shown above.

RASCO Expansion — Ga.

Ground has been broken in Atlanta, Georgia for a new 55,000 square foot distribution center for **Reynolds Aluminum Supply Company**.

Jiroud Jones Construction Company of Atlanta has the general contract for the building. Armco Drainage and Metal Products Com-

pany is the contractor for steel erection and application of Reynolds' standard and Colorweld baked enameled aluminum roofing and siding.

The new warehouse will be on a 5 acre plot across the street from the present Atlanta distribution and manufacturing facilities at 1530 Ellsworth Drive, N. W. The building will increase the company's Atlanta

Bowater Board Plant Now in Operation — S. C.

The recently-completed **Bowater Board Company** plant at Catawba, S. C. — the first major hardboard mill in the eastern part of the U. S. — has begun full-scale production of smooth-on-both-sides hardboard.

John G. Robinson, manager of the new mill, in announcing the start of Bowater production in June, said

that the new installation has been designed to produce 160 million square feet of board a year, using a newly-developed air process. Opening of the plant marks the first step towards diversification in North America by the Bowater Organization, one of the world's major producers of wood products, Mr. Robinson said.

Initial production of Bowater Board from Catawba will go to the

operating facilities by 61 per cent.

It will feature a complete line of more than 30 aluminum building products, including aluminum siding, aluminum shingles, aluminum windows, gutters, soffit, shutters, louvers, doors and many others. Besides the aluminum specialties, the Atlanta center will handle all types of conventional building materials and a complete line of industrial metals.

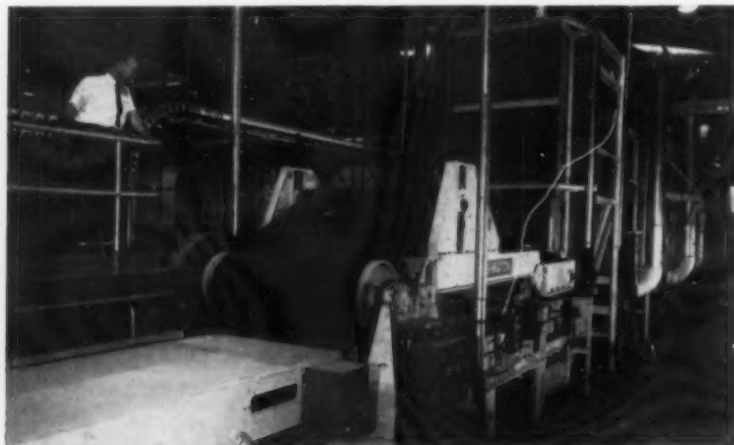
Besides new plants in Atlanta and in Jacksonville, Florida, the company plans similar operations in Richmond, Virginia and Nashville, Tennessee to replace present facilities. Other Warehouse Division operations are in Birmingham, Louisville, Memphis, Raleigh, Savannah, Tampa-St. Petersburg and Miami. The company also operates a container manufacturing division, Southern States Containers, in Birmingham and a large metal painting and fabricating division in Atlanta.

furniture industry, J. R. Hahn, Bowater Board sales manager, explained. The Bowater Board mill is located near the heart of the nation's major furniture-producing area in the Carolinas.

The use of hardboard by furniture manufacturers and other builders has increased steadily since World War II, the Bowater official stated, and "our research shows that there are segments of the market sufficiently large to support a plant manufacturing products superior to present competitive materials."

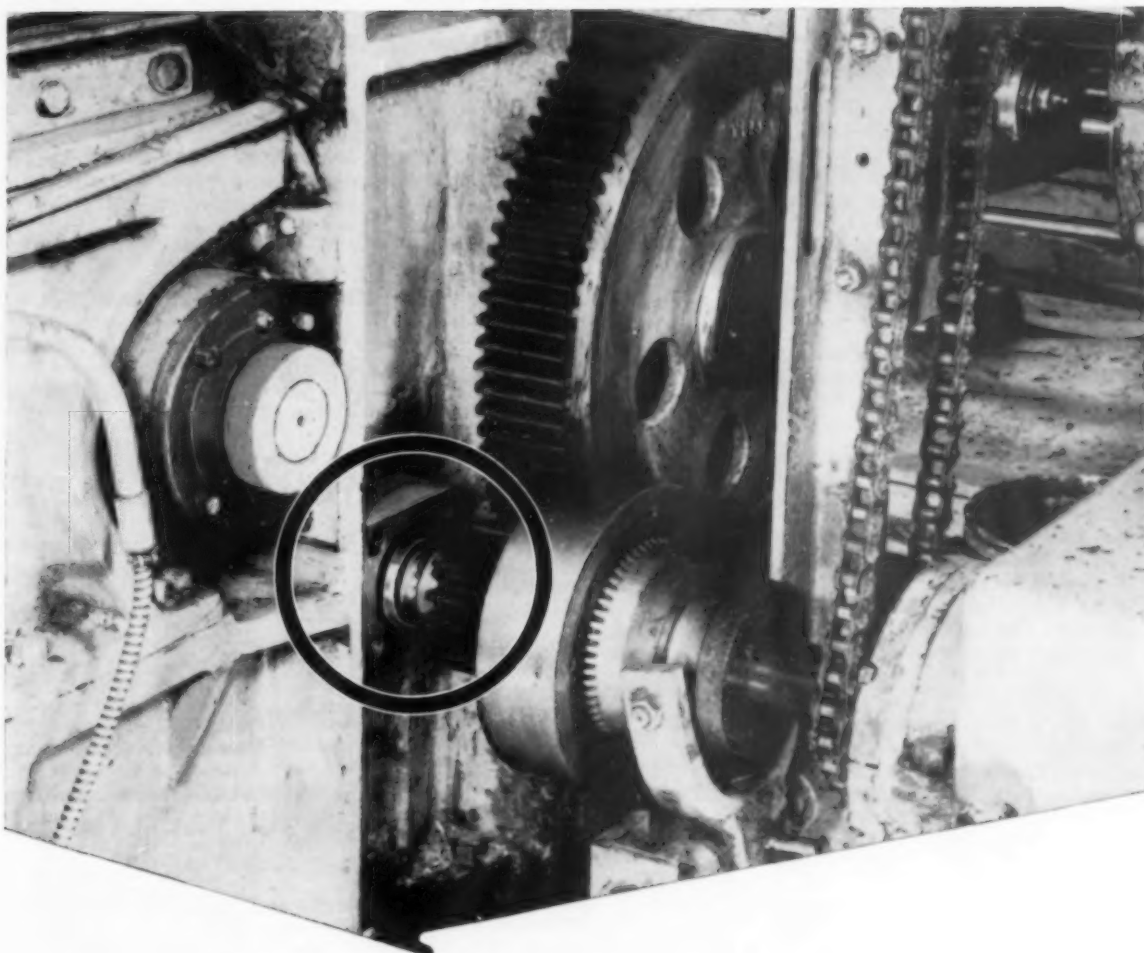
"Bowater Board Company will manufacture exclusively these high-grade products for markets that are being developed rapidly within economical shipping distances from this ideally-located plant," he said.

The mill has one of the fastest



FELTING AND PRECOMPRESSING

Modern felters, shown at right, build up a fiber mat for the production of smooth-on-both-sides Bowater Board. The felted mat then passes through the precompressing equipment which consolidates the mat. Watching the operation from the control panel at left is Palmer L. Kvale, Board mill superintendent.



Dixie Bearings engineers will upgrade your equipment - eliminate early bearing failures!

The original bearings on the pinion drive of this corrugating machine had an average life of only three months. Our customer had been advised that only a complete engineering change of machine drive would solve the problem.

Our engineers refused to accept this verdict and after much research found a standard, double row, roller bearing that, plus a standard adaptor, would fill all dimension requirements and give the radial capacity necessary for trouble-free operation.

We solved this bearing problem (as we have solved countless others) because we are authorized distributors for all nationally-known makes of bearings. We know the characteristics of each type of bearing and our recommendations are backed by many years of experience.

When you need bearings for any purpose, call the branch nearest you. We have the most extensive, the most complete stock of bearings and bearing accessories in the world ready to serve you.

*Providing bearing service
in the South*

DIXIE BEARINGS, INC.

ARKANSAS: Little Rock • FLORIDA: Jacksonville • GEORGIA: Atlanta • KENTUCKY: Louisville • LOUISIANA: Baton Rouge
New Orleans • N. CAROLINA: Charlotte • Greensboro • S. CAROLINA: Greenville • TENNESSEE: Chattanooga • Kingsport • Knoxville
Memphis • Nashville • VIRGINIA: Norfolk • Richmond • Roanoke

News of the South-Southwest — more power . . . more plants . . . more money

production cycles of any hardboard plant in the world with a daily production capacity of 500,000 square feet of board, and requires some 50,000 cords of hardwood annually.

Initially, the mill will employ approximately 100 persons on a three-shift, seven-day week operation. The estimated annual payroll will be \$500,000.

Trial cooking and refining operations at the Catawba mill began in March, 1960. Drying and forming

trials began in May, with erection of the press being completed the same month. The initial load of board was manufactured in June.

Engineering and construction supervision of the building project was handled by Bowaters Engineering and Development, Inc., of Calhoun, Tenn. Daniel Construction Co., of Greenville, S. C., was the general contractor. Palmer L. Kvale is Mill Superintendent. Construction began in November, 1958.

Financing has been completed and engineering begun for the installation of a paper machine beside the **Bowaters Carolina Corporation** pulp mill at Catawba, S. C.

The machine will be designed to produce 75,000 tons of printing paper per year, and is expected to be in operation in 1962. The new paper mill housing this machine is being designed by Bowaters Engineering and Development Incorporated at Calhoun, Tennessee.

FUTURE EVENTS of Engineering Interest

Sept. 7-15: 2nd Coliseum Machinery Show. Chicago Coliseum, Chicago, Ill. A. Byron Perkins, Exec. Mgr., 2807 Sunset Blvd., Los Angeles 26, Calif.

Sept. 8-9: Meeting of Society of Mining Engineers of American Institute of Mining, Metallurgical, and Petroleum Engineers, Chase Park Plaza Hotel, St. Louis, Mo. Coal Division, AIME, 29 West 39th St., New York 18, N. Y.

Sept. 15-17: 42nd Annual Meeting, Public Utilities Assn. of the Virginias, The Greenbrier, White Sulphur Springs, W. Va. Robt. W. McKinnon, Exec. Sec'y, 602 First Federal Bldg., Roanoke, Va.

Sept. 18-20: Fall Meeting, Steel Founders' Society of America, The Homestead, Hot Springs, Va. F. Kermit Donaldson, Exec. V. P., Terminal Tower, Cleveland 13, Ohio.

Sept. 18-21: ASME Petroleum Mechanical Engineering Conference, Jung Hotel, New Orleans, La. American Society of Mechanical Engineers, 29 W. 39th St., New York 18, N. Y.

Sept. 21-23: 1960 National Power Conference, Bellevue Stratford Hotel, Philadelphia, Pa. Power Divisions, AIEE and ASME, 29 W. 39th St., New York 18, N. Y.

Sept. 26-29: Fall Meeting, American Welding Society, Penn-Sheraton Hotel, Pittsburgh, Pa. Arthur L. Phillips, AWS Information Center, 33 West 39th St., New York 18.

Oct. 10-12: National Electronics Conference & Exhibition, Hotel Sherman, Chicago, Ill. Rudolph J. Napolitan, Gen. Mgr., NEC, 228 N. La Salle St., Chicago 1, Ill.

Oct. 17-21: 42nd National Metal Congress & Exposition, Philadelphia Trade & Convention Center, Philadelphia, Pa. American Society for Metals, Metals Park, Novelt, Ohio.

Oct. 24-25: ASME-AIME Fuels Conference, Daniel Boone Hotel, Charleston, W. Va. American Society of Mechanical Engineers, 29 W. 39th St., New York 18, N. Y.

Oct. 28: Southern Regional Meeting, Natural Gasoline Assn. of America, The Carlton Hotel, Tyler, Texas. Wm. F. Lowe, Exec. Dir., 421 Kennedy Bldg., Tulsa 3, Okla.

Nov. 1-3: Material Handling Institute, Central States Show & Technical Conferences, Kentucky Fair & Exposition Center, Louisville, Ky. Paul A. Fisher, Ch. Engr., Anaconda Aluminum Co., Louisville, Gen. Chm.

Nov. 18: Panhandle-Plains Regional Meeting, Natural Gasoline Assn. of America, The Herring Hotel, Amarillo, Texas. Wm. F. Lowe, Exec. Dir., 421 Kennedy Bldg., Tulsa 3, Okla.

Nov. 28-Dec. 2: 24th National Exposition of Power & Mechanical Engineering, ASME Annual Meeting, Statler Hilton Hotel, New York. International Exposition Co., 480 Lexington Ave., New York 17. E. K. Stevens, Mgr.

Jan. 20, 1961: Gulf Coast Regional Meeting, Natural Gasoline Assn. of America, The Robert Driscoll Hotel, Corpus Christi, Texas. Wm. F. Lowe, Exec. Dir., 421 Kennedy Bldg., Tulsa 3, Okla.

Feb. 13-16, 1961: 15th International Heating & Air Conditioning Exposition, International Amphitheatre, Chicago, Ill. American Society of Heating, Refrigerating & Air Conditioning Engineers, National Meeting. International Exposition Co., 480 Lexington Ave., New York 17. E. K. Stevens, Mgr.

Feb. 24, 1961: South Louisiana Regional Meeting, Natural Gasoline Assn. of America, Lafayette Petroleum Club, Lafayette, La. Wm. F. Lowe, Exec. Dir., 421 Kennedy Bldg., Tulsa 3, Okla.

March 15-17, 1961: 40th Annual Convention, Natural Gasoline Assn. of America, The Baker Hotel, Dallas, Texas. Wm. F. Lowe, Exec. Dir., 421 Kennedy Bldg., Tulsa 3, Okla.

April 12-13, 1961: AIEE Materials Handling Conference, Hotel Sheraton, Philadelphia, Pa. H. A. Zollinger, Chm. AIEE Materials Handling Subcommittee, Westinghouse Electric Corp., Pittsburgh, Pa.

April 28, 1961: Oklahoma Regional Meeting, Natural Gasoline Assn. of America, Lake Murray Lodge, Ardmore, Okla. Wm. F. Lowe, Exec. Dir., 421 Kennedy Bldg., Tulsa 3, Okla.

May 19, 1961: Permian Basin Regional Meeting, Natural Gasoline Assn. of America, The Lincoln Hotel, Odessa, Texas. Wm. F. Lowe, Exec. Dir., 421 Kennedy Bldg., Tulsa 3, Okla.

GOULDS PUMPS, INC.

DEPT. SP-90, SENECA FALLS, NEW YORK

Specialists in Pumps!

The largest plant of its kind in the world *plus* over 100 years' experience in pump manufacturing—that's what equips Goulds to answer all your liquid-handling needs. We'll build you a pump specially for your job or draw from our wide line of standard pumps to supply you. Complete details on any pump are available in the Bulletins indicated. Write for your copy.

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GOULDS-PFAUDLER GLASSED PUMP

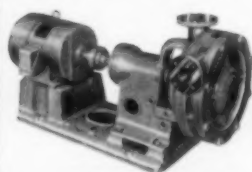


FIG. 3708

Revolutionary new pump designed for handling corrosive liquids. All parts in contact with liquid are glass—fused to metal. Handles all acids except hydrofluoric, and all alkalis to pH 12. Four sizes, with capacities to 700 GPM, heads to 140 ft.

BULLETIN 725.2.

SINGLE-STAGE CENTRIFUGALS



FIG. 3189

Highly efficient open impeller pumps available in 13 sizes for both motor and belt drives. Capacities up to 3000 GPM, with heads up to 180 ft. at 1750 RPM. Well suited for irrigation, general industrial processes, and slurries.

BULLETIN 720.4.

SPECIAL METAL CHEMICAL PUMPS



FIG. 3715

Available in stainless steel, aluminum-bronze, etc. Motor- and belt-driven, for handling corrosive liquids, food products, chemicals. Handle liquids to 350° F., with cooling of head and quenching of gland. Ten sizes, with capacities to 720 GPM, heads to 200 ft.

BULLETIN 725.4.

TWO-STAGE CENTRIFUGALS

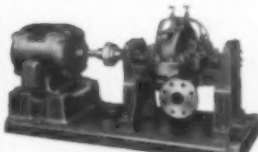


FIG. 3305

Eight sizes provide heads up to 1000 ft., capacities to 1200 GPM, depending on heads. Horizontally split casing. Opposed impellers, with labyrinth diaphragm for maintaining thrust balance.

BULLETIN 722.6.

DOUBLE-SUCTION CENTRIFUGALS

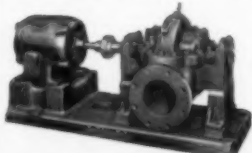
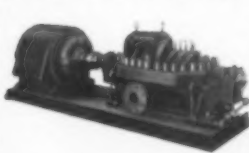


FIG. 3405

Capacities from 200 to 6400 GPM. Heads up to 425 ft. Three shaft and rotating parts assemblies provide for 66 sizes and 132 pump combinations. Horizontally split casing.

BULLETIN 721.6.

MULTI-STAGE CENTRIFUGALS



FIGS. 3330-3360

Medium- and high-pressure multi-stage pumps. Fig. 3330 is furnished in sizes from 3 to 8 inches, up to 6 stages, with capacities ranging from 40 to 2000 GPM, heads to 850 ft. Fig. 3360 furnished in 3, 4, 6, and 8 inch sizes, up to 8 stages, with capacities ranging from 50 to 2250 GPM, heads to 3050 ft.

BULLETINS 722.1 and 722.4.

"SUPPORT HEAD" CENTRIFUGALS

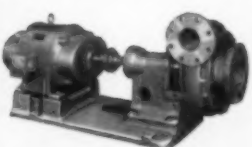


FIG. 3755

Built in 24 sizes, with capacities up to 4000 GPM and heads up to 400 ft. Designed for standard electric motor drive; readily adaptable for belt drive. A substantially built line for general and special applications with many new improvements.

BULLETIN 715.1.

MODULAR VERTICAL PUMPS SUMP PROCESS



BULLETIN 726.2.

For pit depths to 20 ft. in 6 inch increments. Both wet and dry pit types available in capacities up to 3180 GPM, heads to 290 ft. Single and duplex units. Full automatic control. Modern design using standard parts permits quick shipment at most economical cost.

Especially designed for handling corrosive liquids in the chemical process and allied industries. Normally supplied in 316 stainless steel constructions but materials to suit user's requirements can be furnished on application. Capacities to 720 GPM. Heads to 190 ft. For heavy-duty service under most severe applications.

BULLETIN 727.1.

CLOSE-COUPLED CENTRIFUGALS



FIG. 3655

Single-stage pumps built in 23 sizes with a capacity range from 5 to 2000 GPM and heads up to 400 ft. Embodied top horizontal discharge, closed impeller, machined stuffing box, fully protected shaft. Wearing parts easily renewable.

BULLETIN 710.1.

CENTRIPETAL SCAVENGER PUMP



FIG. 2520

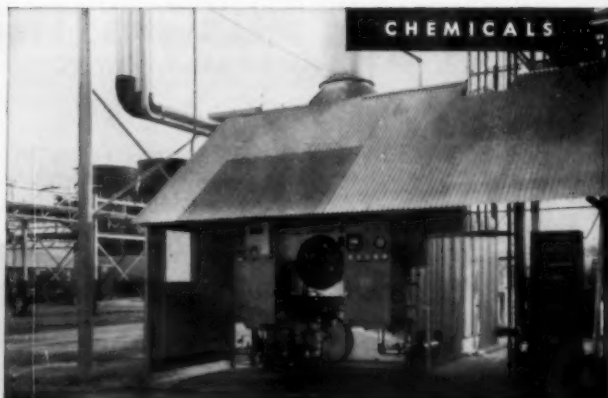
Centripetal action lets it pump liquid, air, liquid and air. Use it for transfer, cleaning-up, or pilot plant operations. Compact, lightweight, portable. All-iron or stainless steel construction. Capacities to 60 GPM, heads to 80 ft.

BULLETIN 725.6.



STEEL

3 — 60,000 lbs./hr. Erie City Natural Circulation Keystone Package Steam Generators — oil fired — outdoors — a large eastern steel mill.



CHEMICALS

1 — 30,000 lbs./hr. Erie City Natural Circulation Keystone Package Steam Generator — gas and oil fired — outdoors — Southern Nitrogen Co., Savannah, Ga.

You'll Find KEYSTONE

Wherever Engineers Insist on the Very Best

Indoors or outdoors, at home or abroad, wherever you look you will find Erie City Keystones delivering low cost, economical steam. The Keystone combines the best in design features and sound construction procedures to deliver a package water tube steam generator with unsurpassed advantages. These mean savings to you.

Symmetrical Design — easy to unload, easy to move.

Tangent Furnace Tubes — act as baffle, no heavy refractory tile required.

Tangent Outer Tubes — plus steel jacketed insulation keep heat loss to a minimum.

Welded Inner Seal Casing — eliminates casing corrosion problems.

If you are presently in the market for a water tube package generator or if future expansion may require a unit of this type, investigate the Keystone. You owe it to yourself to see one in operation before you buy. For detailed catalog information, write for Bulletin SB-6304-J.

KEYSTONES Known by Companies They Serve

• HERE ARE A FEW:

Amalgamated Sugar Co.
American Cyanamid Co.
Bay Petroleum Corp.
Clark Equipment Co.
Firestone Tire and Rubber Co.
Foote-Burt Co.
Kraft Foods
Gulf Oil Corp.
McDonnell Aircraft Corp.
Miles Laboratories, Inc.
Oregon Pulp and Paper Co.
Pittsburgh Plate Glass Co.
Reynolds Metals Corp.
Sherwin-Williams Co.
Texas Co.
Welch Grape Juice Co.

You can depend on

ERIE CITY
Since 1840

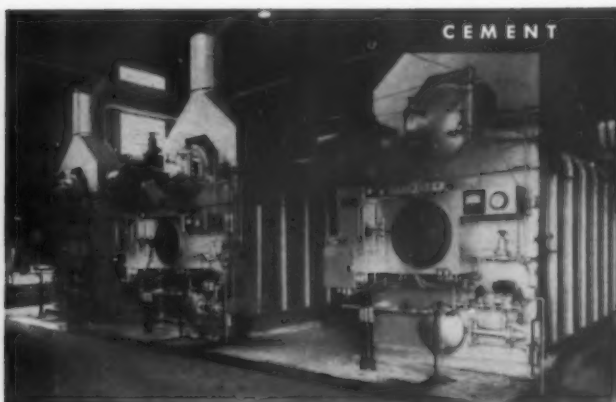
for sound engineering

ERIE CITY IRON WORKS • Erie, Pa.

STEAM GENERATORS • • • • SUPERHEATERS • • • STOKERS • • • PULVERIZERS
ECONOMIZERS • • • WASTE HEAT BOILERS • • • OIL and GAS BURNERS
AIR PREHEATERS • • • FIRE and WATER TUBE PACKAGE BOILERS

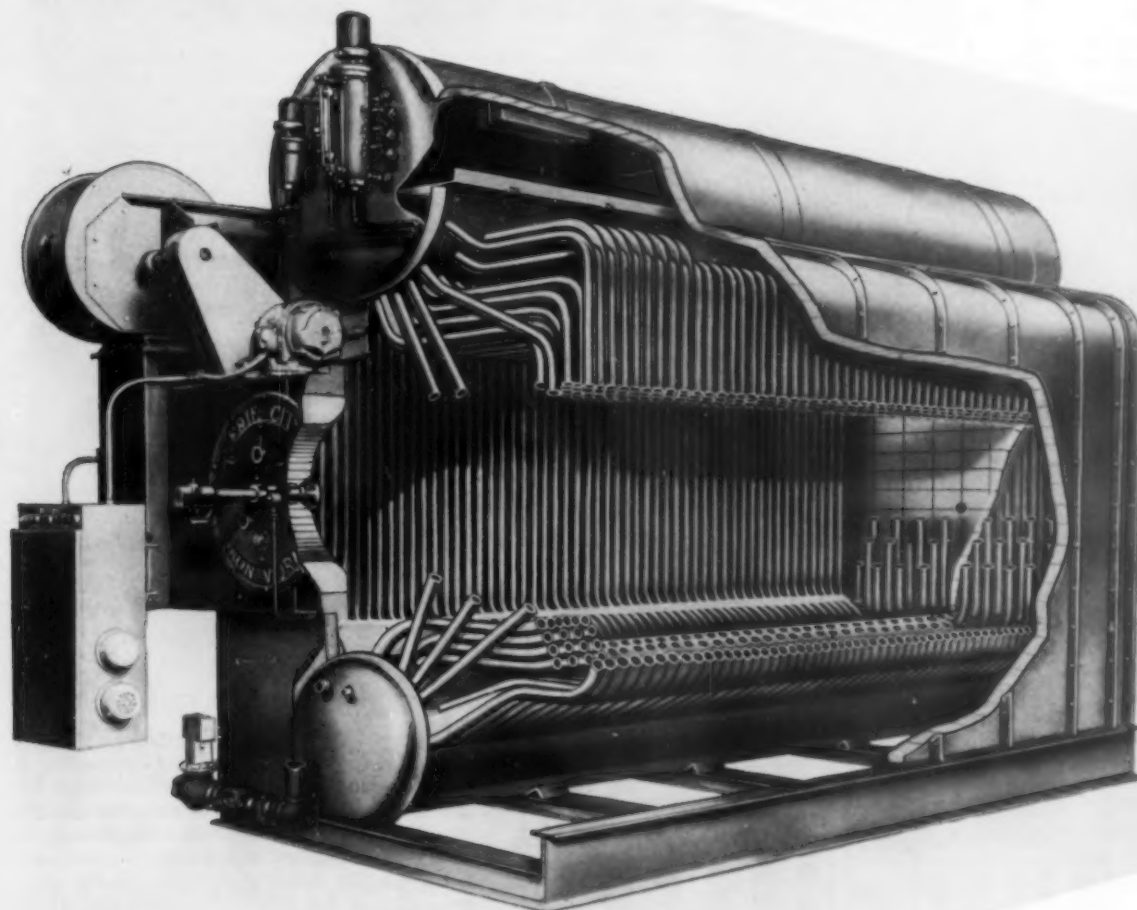


2 — 8500 lbs./hr. Erie City Natural Circulation Keystone Steam Generators — gas and oil fired — Eli Lilly & Co., Greenfield, Ind.

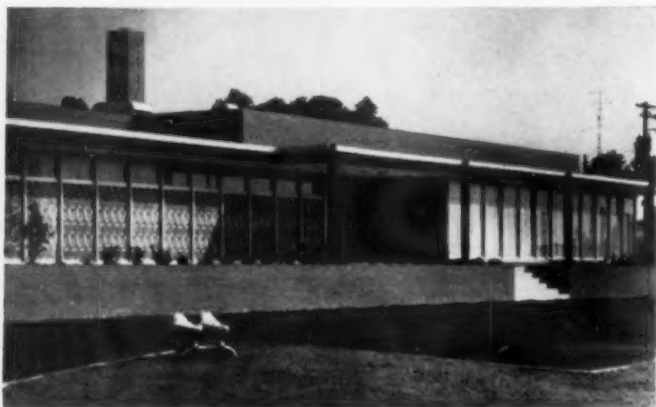


3 — 20,000 lbs./hr. Erie City Natural Circulation Keystone Steam Generators — oil fired — Fabrica Dominicana De Cemento, Ciudad Trujillo, Dominican Republic.

Steam Generators



News of the South-Southwest — more power . . . more plants . . . more money



Noland Co. Opens New Raleigh, N. C., Center

A new \$400,000 branch building has been opened by the **Noland Company, Inc.**, at Raleigh, N. C. Specifically designed for the distribution of plumbing, heating and refrigeration supplies in the Raleigh trade area, the new building replaces a downtown structure which had served as Noland's local headquarters for more than three decades.

The new Raleigh plant is suburban. It features unlimited customer and employee parking, a 2½ acre

blacktop for truck movement and about 33,000 square feet of roofed offices and warehousing space. W. A. Wilkinson, Jr., branch manager, heads a sales office and warehousing staff of 27 employees.

Edwards, McKimmon & Etheredge of Raleigh were the architects and the builder was William C. Vick, Raleigh. Prime contractors included Smith Plumbing & Heating Company, Bolton Air Conditioning & Heating Company and the Raleigh Electric Company, Inc. The Noland organization's 36 branches are located in nine southeastern states and the District of Columbia.

Foxboro's New S.E. Headquarters — Ga.

Meeting the increased instrument needs of process industries in the Southeast, **The Foxboro Company** has moved its seven-state sales and service headquarters to a newly constructed building at 3393 Malone Drive, in Chamblee, Georgia, a fast-growing industrial suburb of Atlanta.

In addition to housing the indus-

trial instrument company's regional headquarters, the new building provides offices for the staff of the Atlanta branch and a complete service and repair shop for the general area.

The new shop contains facilities for calibration and prompt repair of Foxboro instruments, a warehouse stock of replacement parts and accessories, and supplies of standard instruments available for emergency shipment.

The staff of twenty includes Re-

gional Manager E. W. Prendergast; Regional Engineer F. H. Leathers; Regional Service Supervisor W. G. Bloodworth; Atlanta Branch Manager T. A. Jones; and Shop Manager M. S. Batchelder.

New Cold Reduction Mill For TCI Tin — Alabama

A major step in a broad modernization program at the Fairfield, Alabama, Tin Mill of **United States Steel's Tennessee Coal & Iron Division** will get under way immediately with the installation of a new six-stand 52-inch cold reduction mill.

When completed, this will be U. S. Steel's first six-stand cold reduction mill for tin plate.

It will replace two five-stand mills that have been in use since the plant was completed in 1938, and will have a speed of approximately three times that of the existing facilities. It will be capable of cold reducing steel for tin plate at speeds in excess of a mile and a quarter per minute. The new mill is expected to be placed in operation during the early part of 1962. Both the continuous annealing line and pickling line are expected to be completed and in operation by the latter part of this year.

Coupled with the addition of the cold reduction facilities at the tin mill are expanded annealing facilities at Fairfield Sheet Mill of TCI. This phase of the modernization program, using the most modern techniques available, will enable TCI to produce improved surface conditions on sheet products and to provide quicker delivery service to customers.

Duff-Norton — Charlotte

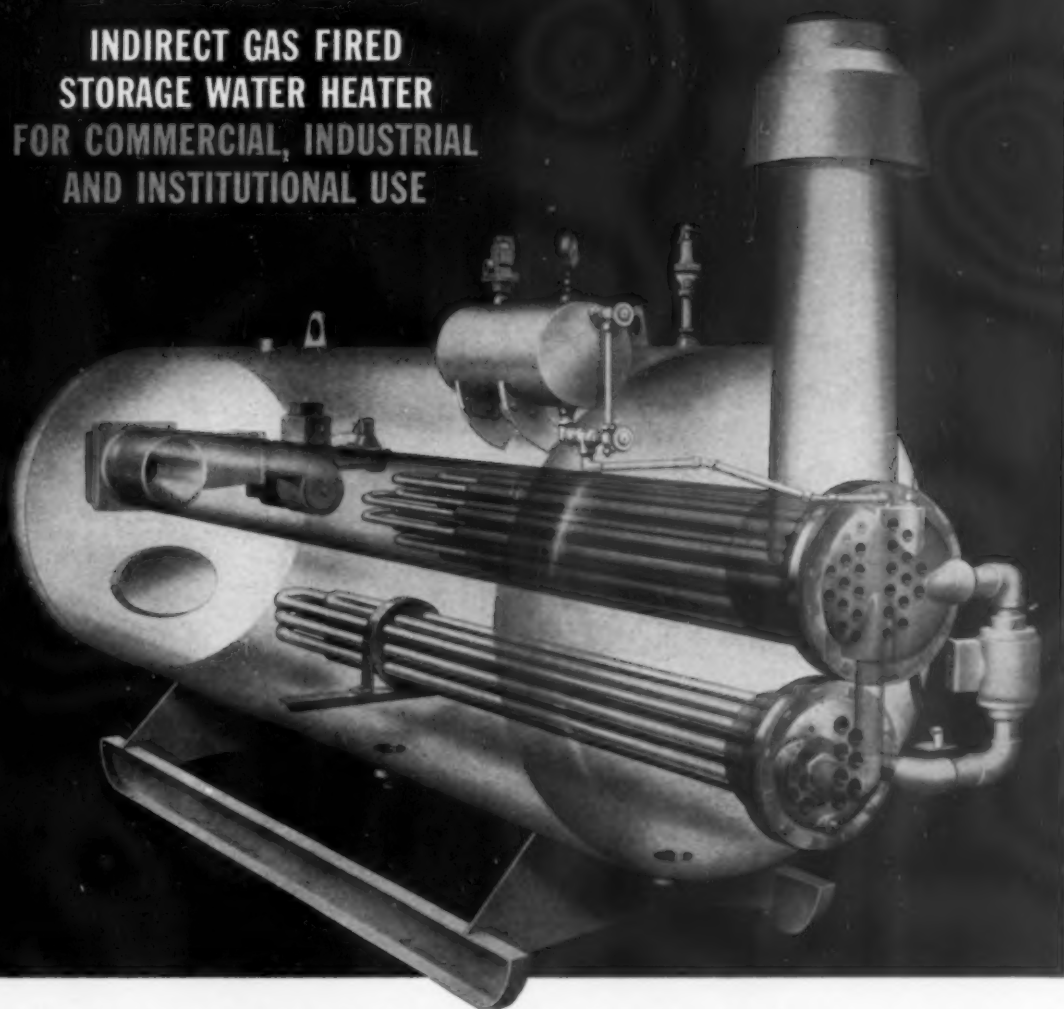
The **Duff-Norton Co.**, formerly of Pittsburgh, is nearing completion of its new plant in the Arrowood Industrial Development Area eight miles southwest of Charlotte, N. C. The plant site covers 26 acres, and the building includes 153,000 sq ft of manufacturing space and 15,000 sq ft of air conditioned office space. The company manufactures industrial lifting jacks and hoists. The plant, which is being built at a cost of over \$1,000,000, is expected to be in full operation by early fall.

(Continued on page 78)



FIRST

INDIRECT GAS FIRED STORAGE WATER HEATER FOR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL USE



*No scaling • No drop-off in rated efficiency
• No fuel waste • No on-the-job assembly • No
complicated maintenance • No limitations
on placement • Fully automatic • Copper
heating surface*

P-K SCALEFREE 230* is a unique rugged unit backed by P-K's 80 years of experience in building and designing quality water heating equipment. It heats water through hot intermediate distilled water. Transfer occurs below the temperature at which minerals that cause scaling precipitate. Efficiency remains unimpaired throughout service life. Linings of pre-Krete or copper are available

*Patent pending

to keep the unit free of rust and corrosion regardless of water conditions.

SCALEFREE 230 features a new P-K gas burner. It operates at maximum practical efficiency. Yet it gives almost noiseless service—does not rumble or boom on startup. This permits location almost anywhere in office buildings, institutions, schools, motels, etc.

SCALEFREE 230 is a complete fully automatic package that can be quickly set in place, hooked up and checked out. It is available in more than 100 storage and recovery combinations. Storage capacities range from 250 to 4000 gallons. Recovery sections range from 390,000 to 2,215,000 Btu. Write for catalog with full information.

Patterson  Kelley
107 Morgan Ave., East Stroudsburg, Pa.

"Here at ST. REGIS we're kraft linerboard

A black and white photograph showing a man in a military-style uniform, including a cap and a belt, walking from left to right. He is carrying a briefcase in his right hand. The background is filled with a large, dense stack of rolls of kraft linerboard, arranged in rows that recede into the distance. The lighting creates strong shadows, emphasizing the texture and form of the rolls.

—WHAT ABOUT MAINTENANCE?
Only OTIS can offer "minutes away" maintenance and engineering service wherever you are—through offices in 297 cities across the United States and Canada.

men...not elevator maintenance men"



DAVE ROBERTS
Plant Engineer
**ST. REGIS PAPER
COMPANY**
Jacksonville, Florida

"Here at ST. REGIS, ours is the specialist's approach to paper making. We know exactly what it takes to make quality Seminole Kraft Linerboard. It has been our business for years.

"It's the same with our OTIS Elevators. We have three of them. Two are used primarily as passenger elevators but they also handle light freight. The third, and most critical, is a 30,000 pound duty OTIS Hydraulic Freight Elevator. It is used to keep our finished output moving. Shutdowns would be costly.

"As specialists in maintaining paper making machines, we decided from the start that the OTIS specialist's approach to elevator maintenance was the best way to keep our elevators running. We have been well satisfied with our choice since 1953."

What is the OTIS specialist's approach to elevator maintenance?

It is MEN . . . MATERIALS . . . METHODS.

MEN: Elevator maintenance is no one-man job. It is an organization task requiring experts in many lines. No individual, even if he devoted his entire time to the job, could do it properly. It calls for men with an unusual combination of skills plus long training in studying parts, assemblies, functions, replacement procedures, testing and adjusting.

How much of the complete elevator installation does OTIS manufacture? Everything! Over 28,000 original and always available replacement parts. From the smallest switches in the machine room to the finished cars and entrances—to make certain that every OTIS installation performs as a completely integrated unit.

**freight elevator
maintenance**

THAT KEEPS ELEVATORS RUNNING LIKE NEW



OTIS ELEVATOR COMPANY • 260 ELEVENTH AVENUE • NEW YORK 1, N.Y.
OFFICES IN 297 CITIES ACROSS THE UNITED STATES AND CANADA



the new **N&W**
originates

**more
coal**

than any other
U.S.
railroad

it pays to deal with the leader in equipment and experience!

- New Norfolk and Western originates more coal, gives you a wider selection of coals to suit your needs and equipment.
- Coal preparation plants along the N&W are mechanized, automated. N&W coals are virtually manufactured products.
- N&W has a larger coal-carrying capacity than any other U. S. railroad and another thousand 85-ton roller bearing hoppers are now on order.
- Easier grades . . . and the nation's newest, most modern fleet of diesels . . . assure prompt service.

For information or assistance, see your N&W Coal Traffic Representative.

N&W



NORFOLK & WESTERN RAILWAY

GENERAL OFFICES • ROANOKE, VIRGINIA

Quality costs less in the long run



**"BLUE RIBBON" boiler feed pumps
for every application . . .**

Demands for higher pressures and capacities in modern boiler feed pumps have also created a need for higher speeds and greater reliability.

And in boiler feed pumps — as in every other type of centrifugal — Byron Jackson can match any requirement with a quality, performance-proved pump.

From direct turbine-generator driven models, such as the giant 12,000 horsepower, 3,600 rpm unit above, to the compact, 15,800 rpm marine boiler feed pump shown at the left, BJ designs are inherently reliable. Built-in balance, minimum NPSH requirements, and simple, effective sealing are common to all BJ Quality Pumps for the power industry.

Quality does cost less in the long run!

Byron Jackson Pumps, Inc.

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INDUSTRY SPEAKS

A Declaration of Policy

MANY INDUSTRIAL and business associations would do well to emulate Southern States Industrial Council by establishing A DECLARATION OF POLICY as a service to those that are making a serious effort to think straight and decide wisely in their political and civil actions during the coming campaigns and elections. The following is abstracted from the introductory pages of the SSIC booklet setting forth their views: A Declaration of Policy.

Rights of the Individual

Protect in every way the rights of the individual as guaranteed by the Constitution. These fundamental rights are inherent in every citizen and must be preserved inviolate.

The Constitution of the United States is based upon the philosophy, first proclaimed in the Declaration of Independence, that all men are endowed by their Creator with certain inalienable rights.

This philosophy is directly contrary to the totalitarian principle that man's rights are conferred upon him by Government and that what Government gives, it may also take away.

In almost every area of our life there is constant erosion of these fundamental human rights, chiefly through Federal taxes and regulation, Government extravagance, deficit spending, and other actions and policies of the Federal Government. The results are to deny to the great majority of the people any opportunity to become financially independent and to make them wards of the Government. This is a serious impairment of freedom.

The Council rejects as inimical to the rights and dignity of man the whole socialistic, leveling down philosophy of the welfare state.

States Rights

Safeguard the rights of individual States by holding the Federal Government to the delegated power as specified in the Federal Constitution and to the statutory procedure in administering that power.

The Council notes with extreme concern for the rights of the States the continuing trend towards Big Government in Washington. With respect to this and other vital matters of national policy, the two major political parties are now almost indistinguishable. Both are committed to a program of growing Federal intervention and internationalism which can only

increase the size, power, and cost of the Central Government, at the expense of the States.

The Council earnestly urges Congress to take a determined stand against this trend.

Under the guise of promoting more rapid economic growth, it is now being urged in some quarters that a larger proportion of our total national earnings and resources should be devoted to public as distinct from private purposes. The Council opposes all such proposals as leading directly and inevitably to bigger and bigger government and more and more intervention and control with outright socialism as the clearly intended goal. In the opinion of the Council, the average American citizen is abundantly qualified to spend his own money without bureaucratic coercion.

The Council pays respectful and admiring tribute to the conservative coalition in Congress. Its public service over the years has been outstanding. Comprised of conservatives of both parties, this coalition has (among other things) been able to check the spending tide, pass constructive labor legislation, prevent Federal aid to education, and turn back those who would socialize medicine.

Notwithstanding the recent Civil Rights controversy, the Council expresses its earnest hope and pledges its unswerving support for the future solidarity and well-being of this coalition. Without its wholesome and stabilizing influence, the Council is convinced that the country would have been much farther along the road to socialism than it is now.

The Council believes that a return to the fundamentals of education is long overdue, that the public school system should remain under local control and that it, along with the home and the church, should constitute a strong first line of defense against subversive attack from whatever source.

TIMELY COMMENTS



Millions Are Happily Sharing the Loot

This is the era of the "Big Grab" in American politics, Arthur H. Motley, president of the Chamber of Commerce of the United States and publisher of Parade magazine said recently in an address to Chamber Members at Oklahoma City.

"We have a form of dishonesty which, for all its subtlety, makes the worst of the old Tammany Hall practices look like peanut pilfering, and millions of us are guilty of sharing happily in the loot," Mr. Motley told a U. S. Junior Chamber of Commerce Community Development Seminar.

"Today tens of millions of dollars are grabbed in lump sums out of the U. S. treasury — out of everybody's pocket — to build a waterways project benefiting only a small area; to build sewers or sidewalks or clear up a blighted downtown area in some community which has found a new way to shirk local responsibility," Mr. Motley said.

"We hear demands for billions of dollars of federal aid to education from areas which are short of school funds only because they hold down their own property taxes as a means of luring industries from other areas. . . .

"One state exempts new manufacturing firms from property taxes for five years. Another offers certain new firms a 7-year exemption. Two others offer exceptions for up to 10 years."

Mr. Motley said that northern, as well as southern states are offering such property tax exemptions, and that while it is any state's right to do so, no state which offers such exemptions can be honestly said to be incapable of supporting its own schools.

"It's become a matter of: you help pay for my children's education so that it will be easier for me to entice away your industry. Or, why should we build our own airport when we can make the rest of the country help foot the bill. Or, our area is depressed; give us some of your tax money that we can use to subsidize some of your industries away from you."

The blame, Mr. Motley said, lies not so much with the professional politician as with the public's attitude toward the political system.

"When people pool their political influence and make selfish demands, their political leaders can be expected to accommodate them," he said.

Mr. Motley predicted that the remedy would come from the younger generation — from "you young people who are inheriting our political system and our economic problems at a time when you are still free from political cynicisms."

Mr. Motley said there is nothing wrong with the political system that cannot be cured by "an upsurge of idealism" which the youth of the country can provide.

He urged the Jaycees to become politically active "at the precinct level, in the party of your choice," and called attention to the National Chamber's Action Course in Practical Politics, which has been completed by more than 70,000 persons in 1,100 communities.



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Aerial view of SEGCO plant looking southwest. Units 1, 2, 3 and 4 from left to right. Construction progress on Units 3 and 4 is plainly indicated. Switchyard is in foreground.

Southern Electric Generating Company Serves Two Southern Utilities

First Units of Million KW Plant

SOUTHERN ELECTRIC Generating Company is the newest member of the group of power companies comprising the Southern Company. Its capital stock is owned in equal shares by Alabama Power Company and Georgia Power Company. The new company has acquired an estimated 340 million tons of coal reserves and has opened mines in the Warrior and Cahaba (Alabama) coal fields.

As the name implies, Segco No. 1 Steam Plant is the first plant being built by the Southern Electric Generating Company. This article describes the first two 250,000 kw units recently placed in operation.

Units 3 and 4 of 250,000 kw each are now under construction and are scheduled for operation in 1961 and 1962 respectively. The plant is designed for an ultimate installation of six units with a

By **K. W. BOYLES**, Chief Electrical Design Engineer
PAUL FISCHER, Chief Civil and Structural Design Engineer
S. H. LAWRENCE, Chief Mechanical Design Engineer
Southern Services, Inc., Birmingham, Alabama

total capacity of 1,600,000 kw. The capacity output of the plant will be divided equally between the systems of Alabama Power Company and Georgia Power Company.

The new plant is located on the west bank of the Coosa River near the mouth of Yellow Leaf Creek approximately one and three quarter miles east northeast of Wilsonville, Alabama.

Buildings and Foundations

The site is underlain with cavernous limestone rock having a clay overburden ranging from 20 to 25 feet thick. Fissures and caverns in the limestone presented a

problem in providing suitable bearing areas for certain of the heavy boiler column loads and turbo-generator foundations.

In areas where fissures and caverns occurred, it was necessary to provide caissons through the layers of rock and mud to solid rock in order to sustain the heavy column loads. Concrete beams under the base slab and resting on the caissons furnish support to the base slab between caissons.

The water passages conveying cooling water to the condenser circulating pumps are placed beneath the condenser room base slab. These are connected with the in-

take structure located near the mouth of Yellow Leaf Creek and water from the Coosa River flows up the creek a short distance through the trash racks and screens in the intake and on into the water passages beneath the base slab.

After passing through the condensers, the warm water is carried through the discharge passages under the base slab to a discharge structure on the river bank downstream and sufficiently removed from the intake structure to prevent recirculation. Capacity of these cooling water facilities is sufficient to meet requirements for the ultimate installation of 1,600,000 kw.

The intake structure contains 10 compartments, each with a trash rack and travelling water screen. Access to the racks, screens and forebay is arranged so that a large crawler crane, which is part of the plant maintenance equipment, can lift out the screens and racks for servicing and dredge the forebay if necessary.

The powerhouse superstructure is a conventional steel frame building consisting of boiler house, coal bunkers, generator room and an attached office annex. The hopper

portion of the coal bunkers is fabricated of 5/16" thick, 20 per cent type 304 stainless clad steel plate to improve corrosion resistance and to facilitate the flow of coal. Forty tons of stainless clad steel plate was used for this purpose for each of the two units.

The boiler house and generator room have walls of corrugated asbestos siding and the office annex has walls of face brick and back-up tile. Interior walls and partitions in the office annex have a 4 ft high glazed tile wainscot with smooth face tile above, and ceilings of acoustical tile. All window sash is aluminum.

The main operating floor is 2 ft above finished ground level and has a quarry tile surface on a reinforced concrete slab. It is designed to carry the weight of a 5 ton capacity fork lift truck at any point. The two lower floors in the powerhouse are also served by the fork lift truck which is transported between by a hydraulic lift platform. A regular passenger elevator serves all floors from base slab to boiler house roof.

With the exception of one floor in the heater bay and the conveyor gallery, all floors and platforms above the operating level are of

steel grating. Twenty-five centrifugal type power roof ventilators, with exposed housing of aluminum, exhaust approximately 750,000 cfm from the boiler room areas above the operating floor for the two units. The open areas below the operating floor are ventilated by the movement of air through the louvers in the outside walls supplying the boiler forced draft fans which are located on the base slab.

Six centrifugal ventilators on the roof (3 per unit) having a total capacity of 90,000 cfm draw air through the coal conveyor gallery. Six other similar type roof ventilators exhaust 120,000 cfm of air from the heater bay of the boiler house. The generator room above the operating floor is ventilated by low silhouette type gravity units on the roof.

Air Conditioning

An unusual feature of this plant is the heating and air conditioning system for the office annex. Only the offices, lobbies, laboratories and assembly room are air conditioned in the summer while all of the building including areas such as locker rooms, storage spaces and machine shop must be provided

Aerial view looking northeast. Units 1, 2, 3 and 4, from right to left. Plume from chimneys indicate Units 1 and 2 are in operation. Chimney on left is for Unit 3. Unit 4 chimney has not been erected. Intake structure is on extreme right and takes water from Yellow Leaf Creek. Discharges are in foreground.



with heat during the winter season.

Waste heat from the generator hydrogen coolers is utilized by two 50 ton water source heat pumps which receive the heated circulating water from the coolers during the heating season. The heat pumps are sized to supply the winter heating requirements for the entire office annex. They are more than adequate to satisfy summer air conditioning needs, at which time river water from the general service water pumps is the condenser cooling medium.

The main control room is inside the main building on the operating floor and is adjacent both to the boiler house and generator room. Enclosure walls are insulated metal panels, since the room itself is air conditioned. Complete toilet facilities as well as a small kitchenette are provided for the convenience of the operators. The substation control room, which is a projection from the main building into the substation yard, is of brick and tile construction and is also air conditioned.

Turbine-Generators

The turbines for Units 1 & 2 are General Electric cross compound, reheat, single flow with 43 inch last stage buckets. The high pressure and intermediate pressure sections (on the same shaft) operate at 3600 rpm, and the low pressure section operates at 1800 rpm. The units are arranged with their centerlines crosswise the turbine room. Nameplate rating is 250,000 kw at 1½ inches Hg back pressure with 1% make-up.

The units have a total of 20 stages each and are designed for throttle steam conditions of 2000 psig and 1000 F. They are arranged for six stages of feedwater heating with the top extraction point taken from the 7th stage of the high pressure turbine section which is also the high pressure turbine exhaust to the reheater.

At full load steam is exhausted from the high pressure section at 526 psia and 662 F. It is then re-



Turbine Room — Unit 2 turbine is in foreground, Unit 1 turbine in background. Motor driven exciters are at left of picture near turbine room wall.

heated and returns to the intermediate section at 1000 F. In addition to the 7th stage, steam for feedwater heating and deaeration is extracted from the 10th stage of the intermediate pressure section and 1st, 3rd, 5th and 7th stages of the low pressure section.

The generators, 2 per unit, are three phase, 60 cycle, 15,000 volt rated at 160,000 kva, 0.85 pf, 0.64 short circuit ratio at 30 psig hydrogen pressure. The units have a separate motor drive exciter for each generator with one spare for the two units. Voltage regulation is by means of amplidyne equipment.

A turbine oil tank with its integral oil pumps and coolers is located on the basement floor at the head end of each of the machines and is enclosed by a concrete wall of sufficient height to contain the full charge of oil in the event of fire or tank rupture. The lubricating oil is conditioned by circulating approximately 25 gpm through combination precipitation and filtration units. A three compartment oil storage tank containing two 7,500 gallon compartments and one 3,250 gallon compartment is located in a fireproof room on the basement floor.

Condenser and Auxiliaries

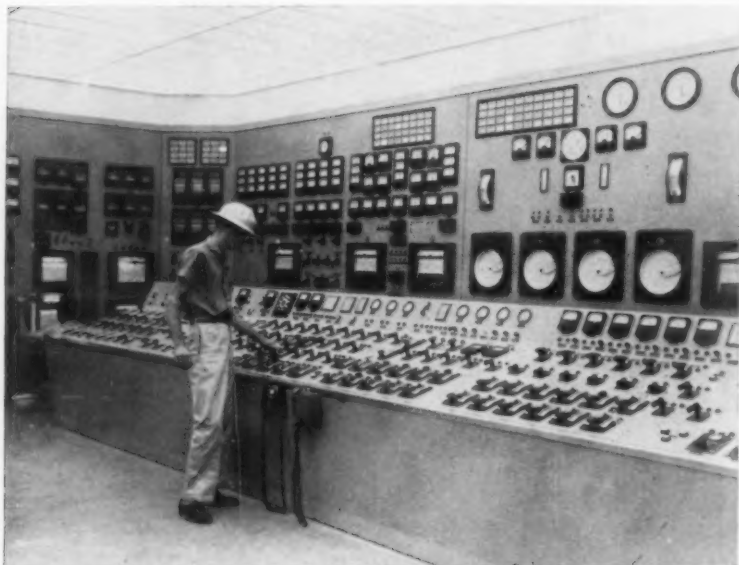
The 150,000 sq ft condensers are located with steam inlets di-

rectly below turbine exhausts and with tubes at right angles to the low pressure turbine shafts. The condensers are double flow, two-pass, divided water box type with 30 ft 1" O.D. 18BWG Admiralty metal tubes. The condenser inlet neck is welded directly to the turbine exhaust and the condenser is resting on rigid supports. Differential expansion between the turbine and condenser is taken care of by a "U" type, rectangular, stainless steel expansion joint located in the condenser neck.

The condensers have deaerating type hotwells and noncondensable gases are removed by mechanical vacuum pumps. Three vacuum pumps are installed for the two condensers — one serves as a spare. Condenser hotwell level is controlled by a combination throttling and recirculation arrangement with a throttling valve in the condensate pump discharge line operated by a torque tube float chamber located on the hotwell.

Condensate recirculation is used both as minimum flow protection for the condensate pumps and the gland seal steam condenser. The recirculation control valve is actuated (through a pneumatic switching valve) by the same float chamber on the hotwell that controls the throttling valve and is set to provide 300 gpm minimum flow through the pumps. Three

Left—Flow Diagram — Southern Electric Generating Company (SEGCO No. 1) Steam Plant.



Unit 1 control board—Unit 2 control board is on opposite side of room with instruments located in same relative position.

1550 gpm horizontal, 5 stage, 510 ft TDH, condensate pumps are provided with each condenser, two of which are required for normal operation with the third as spare. Two 60" horizontal, 68,500 gpm capacity pumps provide the circulating water for each condenser.

Steam Generators

Each turbine is supplied with steam by one 1,700,000 lb/hr, single drum, radiant type Babcock & Wilcox Company steam generating unit. The drum design pressure is 2325 psig and steam conditions at the superheater outlet are 2075 psig and 1000 F. The units are equipped with reheaters designed for 600 psig and a steam flow of 1,550,000 lb/hr with an outlet temperature of 1000 F.

The furnace walls, including two division walls, are water cooled by tangential tubes totaling 25,732 sq ft. The furnace roof and the convection closure section starting immediately to the rear of the rear wall are steam cooled. The furnaces are front and rear fired by 18 circular burners per boiler which are suitable for pulverized coal and future natural gas. Each burner is equipped with 80 gph automatic ignition torches which can be operated remotely in groups of three from the central control room.

The superheaters have a com-

bination horizontal and pendant type primary section and a pendant type secondary section with a total surface of 146,937 sq ft. The reheaters are pendant type with a surface of 43,299 sq ft. Constant temperature is maintained at the superheater outlet between flows of 900,000 and 1,700,000 lb/hr and at the reheater outlet between flows of 820,000 and 1,550,000 lb/hr.

The continuous tube economizers have a heating surface of 29,373 sq ft each. Each steam generator is equipped with two Ljungstrum 262,000 sq ft regenerative type air heaters. For purposes of maintaining exit gas temperatures at acceptable values during low load and cold weather steam coil air heaters using extraction steam are installed in the air ducts immediately ahead of the air heaters.

Ash hoppers are the flooded type with clinker grinders installed ahead of jet ash removal pumps. The jet pumps discharge through overhead lines to a sump tank. A vacuum is maintained in the sump tank by two rotary vacuum pumps.

Soot hoppers are emptied by air-electric soot valve and a hydrovactor which discharges into the sump. The fly ash is mixed with the bottom ash to form a heavy slurry. Slurry is pumped to the disposal area by a centrifugal

ash pump. A complete standby pump and piping system is provided. All ash disposal piping inside the building is Ashcolite and the outside piping is cast iron mechanical joint type.

Pyrites and other mill rejects are disposed of through a refuse hopper and jet pump to the ash hopper. The soot hoppers are equipped with automatic sequential controls and the system is designed for future installation of dry ash collecting equipment.

Boiler Auxiliaries

Two forced draft fans for each boiler are located on the boiler room base slab. Each fan has a capacity of 315,000 cfm at 100 F and 17.5 hg. Fan output is regulated by variable speed hydraulic couplings.

Two induced draft fans for each boiler are located outside the building at yard level. Each has a capacity of 480,000 cfm at 270 F and 14.0" hg. These fans also are regulated by variable speed couplings.

A separate 250 ft chimney is provided for each boiler. They are lined full height with self supporting, acid resistant brick. Electrostatic fly ash precipitators are located on the suction side of the induced draft fans.

An automatic batch type coal scale weighs coal to each pulverizer (six per boiler). The scales receive coal from 2,800 ton per unit continuous coal bunkers and discharge through vertical chutes to the pulverizer feeders.

The feeders are two speed, rotating table type located on the operating floor and feed the pulverizers located on the boiler room base slab through vertical cylindrical pipes.

Each boiler is served by six pulverizers, with separately driven fans, having a capacity of 36,000 lb/hr. Three seal air blowers, one for each boiler with one spare, provide sealing air for the pulverizers.

Superheated steam from the superheater intermediate header is supplied through reducing valves for all boiler and air heater cleaning. The automatic sequential control panel for soot blowers is located in the central control room.

Twenty-seven wall blowers are

installed in the furnace walls and twenty in the division walls with provisions for eleven additional furnace wall blowers if they are required. Twenty-two full retracting blowers are installed in the pendant sections of the superheater and reheater with four half retracting blowers in the horizontal superheater section. Two half retracting blowers are also installed in the economizer.

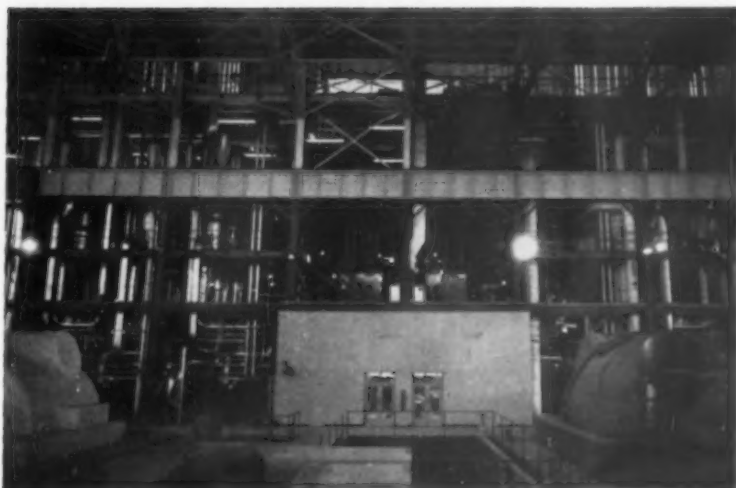
Drum level indication is provided by one Diamond bi-color water column and one Yarway water column on each boiler. The Diamond column is equipped for future television and the Yarway is equipped for mirror viewing at the operating floor between units. Two Yarway remote level indicators mounted on the boiler panel in the control room permit operation with the water columns out of service. A Bailey drum level recorder is also installed in the control room.

Feedwater System

Three boiler feed pumps are installed for each boiler, any two of which will supply the boiler full load requirements with the third as standby. The pumps are 2100 gpm, 10 stage, horizontal, barrel type with 11 to 13% chrome steel impellers and 17% chrome steel wearing rings. The pumps are electric motor driven through hydraulic couplings. Lubrication for the motor bearings is supplied from the pump lubrication system.

The pumps are provided with automatic reset minimum flow valves which open when the flow through any pump falls below 400 gpm. This flow is by-passed through multiple breakdown orifices to the deaerator. A three element feedwater control system controls drum level by varying pump speed through the hydraulic couplings.

Three condensate pumps are installed with each unit, two of which will carry full plant load with the third as standby. The pumps are 1550 gpm horizontal type, 5 stage direct connected to 1200 rpm electric motors. Condensate is pumped through the gland steam seal condenser, continuous blowdown flash condenser and three low pressure feedwater



Interior of turbine room looking toward boilers. Control room is in center with Unit 1 turbine on left and Unit 2 turbine on right.

heaters to the deaerating heater located on the boiler room roof. The deaerating heater discharges to an integral 286,000 lb capacity storage tank from whence the boiler feed pumps take their suction. The boiler feed pumps discharge through two lines of two stages of high pressure heaters to the economizer.

Make-up water is supplied by a four bed demineralizer system having a capacity of 260 gpm, 296,000 gallons between regenerations. The demineralizer discharges to a 150,000 gallon condensate storage tank for each unit — connected to permit two way flow between the storage tanks and condenser hot-wells.

Heaters

The two sets of high pressure heaters are equipped with integral drain coolers. All drains cascade to the next lower pressure heater or drain directly to the condenser. When operating in the upper load range the No. 5 H. P. heater drains to the deaerator. At approximately 60% load when the pressure differential is not sufficient to overcome the static head to the deaerator the drains switch over to the No. 3 L. P. Heater and at extreme low load when the pressure differential between heaters is not sufficient to overcome the static head through the vertical drain coolers all heaters drain directly to the condenser.

The throw-over between deaerators is automatic and is actuated by a differential located between the extractions to the two heaters. The throw-over from the condenser to the next lower stage heater is also automatic and is controlled by a split range float controller and two diaphragm control valves.

The drain lines and the control valves to the condenser and the next lower pressure heater are both sized for full flow. The upper range of the float chamber controls the control valves to the condenser and the lower range controls the valve to the next lower heater.

The No. 3 and No. 2 low pressure heaters have integral drain coolers and the No. 1 low pressure heater has an external drain cooler. The drains from these heaters also cascade to the next lower pressure heater or to the condenser in a manner similar to the high pressure heaters.

The heaters are located above the turbine and each extraction line is provided with a positive closing check valve. The extraction line to the deaerator is provided with two positive closing check valves in series due to the large amount of potential energy in the storage tank. All check valves are actuated simultaneously from the turbine relay dump valve and are tripped individually from high level in the corresponding heater. The control valves are air actuated and all valves controlling flashing

mixtures have chrome-molybdenum bodies and stainless steel trim.

The clear water supply for the plant is provided by a conventional municipal type 520 gpm gravity filtration plant. The filtered water is stored in a 400,000 gallon vertical tank at yard level which supplies the demineralizer and fire protection system.

A 5,000 gallon tank is located on the boiler room roof to supply sanitary services. The tank is kept filled by a 50 gpm pump and an additional chlorinator is provided

to keep the chlorine in the sanitary water up to health department standards. An interconnecting pipe line approximately one and one-half miles long is installed between the filter plant and the City of Wilsonville system so that the Segco filter plant and the City system can back each other up in emergency.

Instruments and Controls

A centralized control room is provided for the two generating units. All controls for the turbine, generator, boiler, station service

and switching are included in this room. A group of vertical panels and a benchboard are installed for each unit and on the side of the room adjacent to the corresponding unit.

The combustion control system is full pneumatic with air being used for both the control signals and power medium to drive the positioning cylinders on dampers, hydraulic couplings and other regulating devices. Steam pressure is the primary control impulse with steam flow acting as an anticipator impulse. Air flow and furnace pres-

Principal Equipment — Segco No. 1 Steam Plant — Units 1 & 2

Southern Electric Generating Company

TURBINE GENERATORS

Turbine-Generators — Two — General Electric Company, 250,000 kw, 3600/1800 rpm, cross compound, single flow, 2000 psig, 1000 F with reheat to 1000 F turbines direct connected to 320,000 kva (two shafts), 15,000 volt, three phase, 6158 amp hydrogen cooled generators.

Main Exciters — Five—General Electric Company 400 kw, 1200 rpm, 375 volt generators driven by G-E 580 hp, 1200 rpm, 4000 volt motors.

CONDENSING EQUIPMENT

Condensers — Two — Foster Wheeler Corporation 150,000 sq ft, horizontal, double flow, two pass divided water box.

Circulating Water Pumps — Four—Foster Wheeler Corporation horizontal 68,500 gpm with G-E 500 hp, 225 rpm, 4000 volt motor drives.

Condensate Pumps — Four—Foster Wheeler Corporation 1550 gpm, horizontal, five stage, 510 ft TDH with G-E 300 hp, 1200 rpm, 4,000 volt motor drives.

Air Removal Equipment — Three—Worthington Corporation Y-type vertical, two stage vacuum pumps with air metering equipment and Maxim silencers.

STEAM GENERATING EQUIPMENT

Boilers — Two—Babcock & Wilcox Company, 1,700,000 lb/hr at 2075 psig and 1000 F total temperature, single drum, direct fluid radiant type.

Superheaters — Two—B&W continuous tube horizontal and pendant type secondary, temperature control range 900,000 to 1,700,000 lb/hr.

Reheaters — Two—B&W continuous tube two stage, pendant type, temperature control range 820,000 to 1,550,000 lb/hr.

Furnaces — Two—B&W water cooled walls, steam cooled roof and convection closure, wall surface 25,732 sq ft.

Ash Hopper — Two—Allen-Sherman-Hoff flooded type, with clinker grinders and water jets.

Ash Handling System — Two—Allen-Sherman-Hoff 4 in. Ash-colite pipe, valves, fittings, hydrovacuator steel collector sump and sequential control for dust valves.

Ash System Vacuum Pumps — Two—Roots-Connersville positive displacement vacuum pumps, 2800 cfm at 15" Hg.

Ash Pumps — Two — Allen-Sherman-Hoff horizontal "D" frame, V-belt driven 2200 gpm at 125 ft TDH.

Ash Sluice-Screen Wash Water Pumps—Three—Ingersoll-Rand horizontal split case, 2200 gpm, 307 ft NTDH.

Air Heaters — Four—Air Preheater Corporation regenerative type, 262,200 sq ft, 953,000 lb/hr, inlet air temperature 100 F, outlet air temperature 612 F.

Economizers — Two—B&W continuous tube 28,860 sq ft.

Pulverizers — Twelve—B&W Type EL 76 with separately driven primary air fan and rotating table type feeders, capacity 36,000 lb/hr.

Burners — Thirty-Six—B&W circular type for pulverized coal and future natural gas.

Soot Blowers — Two complete sets of 88 each—Diamond Power Specialty Corporation, automatic sequential steam, electrically controlled and operated.

Safety Valves — Twenty-eight — Manning, Maxwell & Moore (Consolidated)

Blow-Off Valves — Manning, Maxwell & Moore (Hancock)

Blow-Off Tanks — Two—Snyder Tank Corporation

Fly Ash Precipitators — Four—Western Precipitation Corporation electrostatic 349,000 cfm, 95% efficiency.

Combustion Controls — Two—Bailey Meter Company pneumatic.

Superheat and Reheat Temperature Controls — Two—Bailey Meter Company pneumatic.

Chemical Feed Pumps — Four—Proportioners, Inc., two 16.46 gph and two 32.7 gph.

Lighter Oil Pumps — Three—Warren Pump Co., Inc., gear type 25 gpm, 300 psi TDH.

DRAFT EQUIPMENT

Chimney — Two—M. W. Kellogg Company, concrete shaft, acid resistant brick lining, 18' 6" diameter, 250 ft high.

Ductwork — Birmingham Tank Company (Ingalls)

Induced Draft Fans — Four—American Blower Corporation (Sirocco) 480,000 cfm at 270 F and 14.0 in. of water sp with G-E 1500 hp, 430 rpm, 4000 volt motor drives.

Forced Draft Fans — Four — American Blower Corporation 315,000 cfm at 100 F and 17.5 in. of water sp with G-E 1000 hp, 800 rpm, 4000 volt motor drives.

Hydraulic Couplings (F.D. and I.D. Fan) — Eight—American Blower Corporation Type VS with external coolers.

Draft Controls — Two sets — Bailey Meter Company pneumatic type.

BOILER FEEDWATER EQUIPMENT

Boiler Feed Pumps — Six—Pacific Pumps, Inc., 10 stage, barrel type 2100 gpm at 317 F, 6085 ft TDH with American Blower Corp. fluid drives, internal coolers, Kingsbury thrust bearings and G-E 4000 hp, 3600 rpm, 4000 volt motor drives.

Closed Feedwater Heaters — Fourteen — Yuba Heat Transfer Division, vertical channel down, U tube two pass: Two—with 5250 sq ft and external drain cooler. Two—with 5593 sq ft and integral drain cooler. Two—with 4620 sq ft and integral drain cooler. Two—twin 2910 sq ft each with integral drain coolers. Two—twin 3520 sq ft each with integral drain coolers.

Continuous Blowdown Heat Exchangers—Two—Yuba Heat Transfer Division—298 sq ft horizontal with 30" O.D. x 7' 7" flash tank.

Deaerating Heaters — Two—Graver Water Conditioning Co. direct contact tray type 1,717,000 lb/hr capacity with connected 286,000 lb surge tank.

Demineralizer — One—Cochrane Corporation—four bed, maximum flow rate 260 gpm, 296,000 gallons between regenerations.

Heater Drain Controls — Fisher Governor Company diaphragm operated through torque tube float chambers.

Feedwater Controls — Two—Bailey Meter Company, pneumatic type, three element.

FUEL HANDLING

Belt Conveyors — Transall, Incorporated—48" belts, belt feeders, scalping screens, gravity take-ups 1360 tph.

Scalping Screens — Two—Link-Belt Company, mechanical vibrating type 700 tph.

Crushers — Two—American Pulverizer Company—rolling ring type, 750 tph, 600 rpm with 400 hp, 4000 volt motor drives.

Car Dumper — One—Heyl & Patterson, Inc., rotary type 250,000 lb capacity, 60 second dumping cycle.

Railroad Track Scales — Fairbanks-Morse Company—four sections, 100 ton per section capacity.

Crushed Coal Scales — Twelve—Richardson Scale Company automatic, 500 lb weigh hopper, 40 tph capacity.

Vehicle Coal Moving Equipment — One—M-R-S Manufacturing Co. tractor and scraper. One—Euclid twin engine tractor-scraper. One—Clark rubber tired tractor dozer. One—International Harvester Crawler tractor and dozer.

Switching Locomotives — Two—General Electric Company, twin engine, 100 ton.

sure are regulated by fan hydraulic coupling speed controls, but damper controls are also provided for regulating at low loads. Both primary and secondary air are measured; the former by venturi sections and the latter with air foils.

The steam temperature control system is also full pneumatic type and is divided into two separate parts: primary steam and reheat steam. The primary steam temperature control is two-element with steam temperature as the primary element and boiler gas

flow as the anticipating element. Steam temperature is controlled by spraying feedwater into the piping between the primary and secondary superheaters.

The reheat steam temperature control takes its primary impulse from steam temperature although gas flow and primary steam flow are used as anticipating elements for gas recirculation. Reheat steam temperature is maintained by recirculating flue gas from the economizer outlet to the furnace bottom. Sprays are installed in the cold reheat line as a back-up for

the gas recirculation in maintaining reheat temperature.

Service Water System

A 6000 gpm general service water pump is installed with each unit, with a third pump installed as spare for either unit. The three pumps take their suction from the condensing water intake tunnel through twin strainers installed with each pump. The pumps discharge into a common header which supplies cooling water for the hydrogen and turbine oil coolers, fan and boiler feed pump hy-

PIPING AND VALVES

General Piping Contractor	Benjamin F. Shaw Company
Main Steam Piping	12.75" O.D. x 1.875" and 17.50" O.D. x 2.50" Chrome-molybdenum Babcock & Wilcox Company hollow forged.
High Temperature Reheat Piping	16.00" O.D. x 0.75" and 20.00" O.D. x 0.842" Chrome-molybdenum fusion welded plate pipe.
General Service Valves	The Wm. Powell Co. and Stockham Valve & Fitting Co.
Boiler Feed Check and Globe Valves	Edward Valves, Inc., 14" and 10" size.
Positive Closing Check Valves	The Chapman Valve Manufacturing Co. tilting disc, air operated.
High Pressure Small Valves	Manning, Maxwell & Moore (Hancock)
Fire Protection Piping Contractor	Associated Engineers, Inc.
Level Controllers and Control Valves	Fisher Governor Company.
Circulating Water Butterfly Valves	Twelve — Henry Pratt Company 66" motor operated.

INSTRUMENTS

Control Boards	The Wolfe & Mann Mfg. Co.
Steam Flow Meters	Four—Bailey Meter Company.
Boiler Attenuator Flow Meters	Four—Bailey Meter Company.
Feedwater Flow Meters	Eight—Bailey Meter Company.
Condensate Flow Meters	Two—Bailey Meter Company.
Draft Ganges	Sixteen—Bailey Meter Company.
Pressure Indicators	Manning, Maxwell & Moore (Ashcroft)
Pressure Recorders	Bailey Meter Company
Mercury Columns	Manning, Maxwell & Moore (American)
Thermometers	Manning, Maxwell & Moore (American)
Barometer	Manning Maxwell & Moore (American)
Temperature Recorders	Minneapolis-Honeywell (Brown)
Conductivity Recorders	Minneapolis-Honeywell (Brown)
Oxygen Recorder	Minneapolis-Honeywell (Brown)

MISCELLANEOUS

Fire Pumps	One—Hale Fire Pump Co. gasoline engine driven. One—Dean Hill Pump Co. electric motor driven.
Turbine Oil Purifiers	Two—Bowser, Inc., 1500 gph capacity.
General Service Water Pumps	Three—Ingersoll-Rand Company horizontal split case 6000 gpm 140 ft NTDH.
Traveling Water Screens	Five—Chain Belt Company 70,000 gpm capacity.
Air Compressors	Four—Ingersoll-Rand Company, three 352 cfm service compressors and one 327 cfm non-lubricated control compressor.
Switchgear Fire Protection Equipment	Pyrene C-O-Two, Fire Equipment Co.
Low Pressure Water Strainers	Six—Elliott Company.
Expansion Joints	Twenty — Zalles Brothers stainless steel.
Sump Pumps	Two—Thomas Foundries, Inc., horizontal dredge type, 1800 gpm, 34 ft TDH, 350 rpm, V-belt driven.
Storage Tanks	Ten—The Ingalls Steel Construction Co., Inc.
Insulation Contractor	Insulation Engineers, Inc.
Insulating Materials	Owens-Corning Fiberglas Corp. (Kaylo) with aluminum covering.
Filter Plant Equipment	Equipment, Inc.
Vacuum Cleaning Equipment	One—Lamson Corporation industrial stationary type, 900 cfm at 10" Hg with 38" x 120" combination dust separator.

MISCELLANEOUS BUILDING EQUIPMENT

Generator Room Cranes	Two—Whiting Corp. 100 ton capacity each with 25 ton auxiliary lift.
Boiler House Crane	Milwaukee Crane Division of Industrial Enterprises, Inc., 25 ton capacity.

Structural Steel (Building)	American Bridge Division of U. S. Steel Corp. 7500 tons.
Structural Steel (Outdoor Coal Handling)	O'Neal Steel, Inc. 1225 tons.
Window Sash & Operators	William Bayley Co.
Aluminum Awning Windows	Superior Window Co.
Doors — Hollow Metal	American Metal Works, Inc.
Doors — Tubular Steel	Penetra, Inc.
Steel Rolling Door	J. G. Wilson Corp.
Corrugated Asbestos Siding	Corrugated Asbestos Contractors, Inc.
Steel Floor Grating	Borden Metal Products Co.
Passenger Elevator	General Elevator Co.
Freight Elevator	General Elevator Co. Platform lift.
Heating & Air Conditioning	The Hardy Corp.
Roof Ventilators	Octagon Ventilator Co.
Control Room Wall Panels	The Mills Co., Inc.
Sewage Treatment Plant (Packaged Type)	Dorr-Oliver, Inc.
Ventilating Louvers	H. H. W. Bergmann Co.
Laboratory Furniture	Kewanee Technical Furniture Co.
Fork Lift Truck — 5 Ton Capacity	Clark Co.

ELECTRICAL EQUIPMENT

230 KV Switchyard Structure	Southern Services, Inc., Aluminum conductors—Alcoa. Insulators—Lapp Insulator Company. Steel—Nashville Bridge Company. Connectors—Anderson Electric Company.
Main Power Transformers	Two—Westinghouse Electric Corporation, 3 phase, 300 mva, 14.3/230 kv, 900 kv BIL, Type FOA.
Station Service Transformers:	
One	—Westinghouse Electric Corporation, 3 phase, 12/16 mva, 230/4.16 kv, 900 kv BIL, Type OA/FA transformer.
Four	—Westinghouse Electric Corporation, 3 phase, 10/12.5 mva, 15/4.16 kv, Type OA/FA transformers.
Four	—Westinghouse Electric Corporation, 3 phase, 1200 kva, 4160/600 volt, Type OA transformers.
Two	—Westinghouse Electric Corporation, 3 phase, 750 kva, 4160/600 volt, Type OA transformers.
Three	—Standard Transformer Company, 225 kva and three 150 kva, 3 phase, 600-208/120 volt, non-flammable liquid filled transformers.
Instrument Transformers	Allis-Chalmers Mfg. Company
Generator Buses	Two—I-T-E Circuit Breaker Company, 15 kv, 6500 ampere isolated phase.
Oil Circuit Breakers	Five—General Electric Company, 230 kv, 15,000 mva, 1600 ampere.
Outdoor Disconnect Switches	I-T-E Circuit Breaker Company — Twelve 230 kv, 900 kv BIL, 1600 ampere and eight 1200 ampere.
Station Service Switchgear:	
Two	—Westinghouse Electric Corporation, 4160 volt metal-clad units with 250 mva breakers.
Four	—Allis-Chalmers Mfg. Company, 600 volt metal-enclosed units with 25,000 I.C. breakers.
Two	—I-T-E Circuit Breaker Company, 4160/600 volt, 500 kva, metal-clad unit substations with 250 mva, 4.16 kv breakers and 15,000 ampere I.C. 600 volt breakers.
Two	—Wolfe & Mann Mfg. Company, 208 volt metal-enclosed units with Allis-Chalmers Mfg. Company 600 volt air circuit breakers.
Motors	General Electric Company.
Station Battery	Gould National Batteries, Inc.
Battery Chargers	Two—Electric Products Company, 15 kw, 550 volt a-c/125 volt-d-c diverter pole M-G sets.
Emergency A-C Generator	Waukesha Motor Company
Power & Control Cables	Kertie Company and Okonite Company
Communication Equipment	Automatic Electric Company — PAX Switchboard. Gai-Tronics Corporation — P.A. System
Substation Switchboard:	
	Wolfe & Mann Mfg. Company—Fabricators
	General Electric Company—Relaying and Switches
	Weston Corporation—Indicating Instruments
	Leeds & Northrup Company—Recorders
	Esterline Angus—Recorders
	Autocall Company—Annunciators
Sequential Operation Recorder	Fischer-Porter Company
Automatic Oscillograph	Hathaway Instruments, Inc.
Lighting	Day-Brite Company, Holophane Company, Westinghouse Electric Corporation, Guth Company, Benjamin Electric Mfg. Company.

draulic coupling oil coolers and miscellaneous bearing and cooling water services throughout the plant.

A 50,000 gallon storage tank for each unit is installed on the boiler room roof to supply emergency water in the event of loss of pumps. Connections are also taken from the service water header to supply raw water to the filter plant and cooling water to the heat exchangers installed in connection with the heat pump serving the office annex.

Coal Handling System

Coal from the Company's own mines is received by rail in 100 ton nominal capacity aluminum cars. The cars are unloaded into a 350 ton hopper by a rotary car dumper. Car switching is handled by a 100 ton diesel-electric locomotive. Prior to dumping, each car is weighed on a 400 ton lever type track scale equipped with an electronic weight recorder. Controls are located between the dumper and scale so both weighing and dumping can be handled by one man.

From the track hopper the coal is fed onto the 1360 tph belt conveyor system by two 700 tph belt feeders. Coal feed is regulated by gates on the hopper and variable speed drives on the belt feeders.

Coal is conveyed and elevated from the track hopper to the crusher building which houses two 750 tph ring type crushers for reducing all coal to minus one inch. Mechanical vibrating scalping screens ahead of the crushers screen out all coal minus inch and a quarter to by-pass the crushers.

The building also houses a magnetic separator and includes transfer points for routing coal to the boiler room bunkers or to storage. Self propelled shuttle conveyors distribute coal in the bunkers located in the boiler room above the pulverizers.

Normal reclaiming from storage is done through the track hopper which is wide enough to permit the passage of rubber tired vehicles along side of the dumper. For emergency reclaiming operations an auxiliary hopper and conveying system is provided which discharges coal onto the main system downstream of the crusher.

Distribution, compaction and reclaiming of coal in the storage area is presently handled by two rubber tired tractor scrapers and one rubber tired and one crawler type tractor dozer.

Fire Protection

Water fog fire protection is installed for oil and general fires and fixed carbon dioxide systems for 4160 volt and 600 volt switchgear. Portable chlorobromomethane units are provided at strategic locations for first aid. The primary protection is the water fog system.

The main power and station service transformers are protected by remote controlled deluge type fog tips. In addition all indoor and outdoor oil reservoirs, oil handling equipment and hydrogen handling equipment as well as danger points in the coal handling system such as crusher house, transfer points, etc., are likewise protected by deluge fog tips.

Two high pressure pumps, one engine driven and one motor driven, supply the fog system. Water for the fog system is stored in the 400,000 gallon filtered water tank where 150,000 gallons is held for fire protection and cannot be drawn off through any other piping.

Generator Connections

The unit concept of generator-transformer connections is employed in this plant as in all other recent large plants of the Southern Company.

The high-pressure generator of each unit is grounded through a 50 kva, 14,400-120/240 volt non-flammable liquid filled transformer having a 240 volt cast grid resistor connected in the secondary. Secondary current transformers and overcurrent relays are installed to trip the units on ground faults. An overvoltage relay is installed for alarm only.

Generator output of each unit is fed to respective step-up transformers through 15 kv, 6500 ampere, isolated phase busses. The high and low pressure unit generators are connected together at generator voltage within the transformer. This connection eliminates costly generator tie busses and resulting sections of high capac-

ity bus. No additional charge is made by the transformer manufacturers for the internal connection.

The unit station service transformers are located directly below the generator busses and connected to the busses through isolated pole, gang operated disconnect switches with seal-off bushings between the switch and main bus. Since this short tap presents a minimum exposure to faults and because of maximum high speed relay protection applied, it was decided to use a 1200 ampere tap connection and realize the considerable saving over a connection designed for the maximum momentary fault currents.

The same considerations applied to the generator potential transformers which are located in segregated phase metal-clad compartments near the generator terminals. The potential transformers are connected to the main generator busses through current limiting fuse and resistor assemblies.

With station type lightning arresters protecting the high voltage winding of the main power transformers, the possibility of a surge overstressing the generator windings is very remote. The need of generator surge protection is, therefore, questionable. Since any connection to the generator bus is a potential hazard, it was decided to omit surge protective equipment to minimize hazards and reduce costs.

Main power transformers are three phase, FOA type rated 300 mva, 14.3/230 kv. The FOA transformers were selected over type FOW after comparison of annual cost favored only slightly the water-cooled units. It was felt that the maintenance factor would offset the additional cost of the FOA transformers.

A reduced insulation level of 900 kv was selected for the high voltage winding of these transformers and since this winding is grounded, it is reduced on the neutral end to 110 kv.

Station Service

The unit system is also employed for the station auxiliary power. Each unit station service consists of two sets of 4160 volt and 600 volt transformers taking power

from respective generator busses and supplying two sets of station service switchgear. One set of station service transformers taking power from the 230 kv system supplies starting and standby power to the 4160 volt and 600 volt switchgear of both units over common tie busses.

Use of two sets of unit transformers was adopted because:

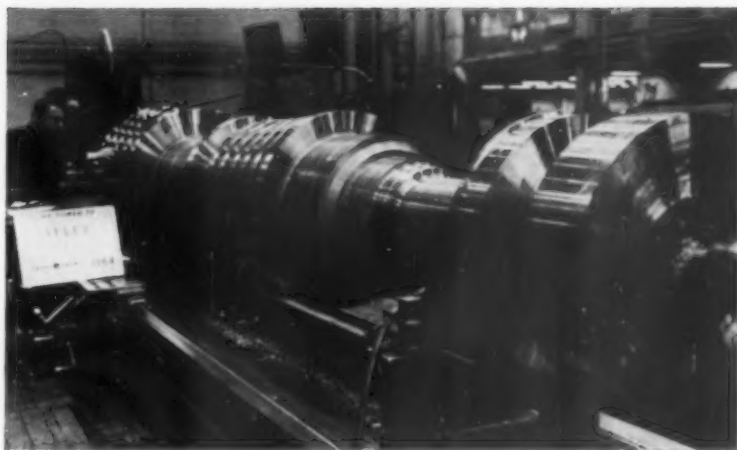
1. It was possible to hold standard transformer impedance ranges and maintain 85% voltage on starting of largest motor, while limiting short circuit and momentary currents to the required level. Feeder breakers are rated 1200 amperes, 250 mva, 4160 volts and 600 amperes, 25,000 amperes I. C., 600 volts.

2. It was possible to reduce capacity of the starting transformers with their high voltage, high cost winding. The starting transformers are sized to spare one set of unit transformers and provide starting power for a second unit.

3. Duplicate supplies improve reliability over a single supply system. The spare exciter, stand-by boiler feed pump, stand-by condensate pumps and coal handling are fed from a 4160 volt "swing-bus" which can be supplied from either of the duplicate unit station service busses. The swing-bus enables uniform loading of a station service supply during outage time of a unit connected auxiliary. Auxiliaries are so divided, between the two 4160 volt supplies, as to permit operation at reduced load on failure of one switchgear section. This division of load, for reduced capacity operation, is also extended insofar as possible to the 600 volt station service busses.

Transfer of station power supply is accomplished by manual hot-transfer. Interlocks are provided to prevent two sources being connected to a bus except during the momentary transfer period.

A 225 kw engine-driven generator is installed with connection facilities to all 600 volt busses. On loss of all units and separation from the system, this generator will supply necessary power for safely bringing the units down. Emergency plant lighting can also be supplied from this source. The engine generator is started and



A high pressure steam turbine rotor, in one of the turbine-generators at the new SEGCO station, is shown on a grooving lathe during its manufacture by General Electric.

switched by remote manual controls on the boiler-turbine control board.

The supply for smaller auxiliaries and lighting is from a 208/120 volt system. These transformers are connected to the 600 volt busses and switching of 208 volt circuits from main to stand-by sources is by remote manual controls in the control room.

In general, motors through 7½ hp are supplied from the 208 volt system; from 10 hp through 250 hp from the 600 volt system; and all above 250 hp from the 4160 volt system.

The coal handling system is supplied by two 4160/600 volt metal-enclosed unit substations, one in the coal supply area and one at the powerhouse. Motors are supplied at 4160 volt or 600 volt as dictated by starting voltage drops. A common breaker, with two sets of protective relays, feeds both substations. This supply is from the swing-bus of the main 4160 volt station service switchgear. Duplicate supplies are provided for the coal handling system, one from each unit.

A control center in the supply area permits an operator to route coal from track hopper to storage or plant and from storage to plant. A second control center located on the conveyor floor above the bunkers enables a second operator to take coal from the supply system and fill the bunkers of either unit.

The usual sequential starting

and stopping interlocks are provided to prevent coal piling up at any point in the system.

Station Battery

One 125 volt, 1140 ampere hour, lead-acid flat plate battery is installed to supply normal and emergency d-c power for the plant and substation. In this regard, design departs from the unit concept.

The battery size is based on a 30 minute emergency loading. Turbine emergency d-c loading is to be limited by breaking vacuum on units to bring them to rest within this time. The gasoline engine generator will be started within this period to relieve the battery of emergency lighting loads, supply the battery charger and to provide necessary power for other auxiliaries, essential to normal shutdown, in the event that plant is separated from the system during the emergency.

Two 15 kw diverter pole M-G sets are provided for battery charging. One set will serve as a spare for the initial and all subsequent chargers. Connections are provided so that unit controls may be utilized on the spare charger.

Cable System

Oil base insulated cables are employed for both power and control circuits in all areas where ambients do not exceed 40 C.

(Continued on page 93)



Panel members for the group session on employee selection are: (l to r) Chairman, ALVIN S. DAVIS, director of industrial relations, Callaway Mills, LaGrange, Ga.; A. T. HANSON, director of industrial and public relations, West Point Manufacturing Co., West Point, Ga.; T. W. LAUDERDALE, chief personnel analyst, Union Bag-Camp Paper Corp., Savannah, Ga.; J. W. JELKS, director of industrial relations, J. P. Stevens & Co., Inc., Greenville, S. C.

EMPLOYEE SELECTION DISCUSSED

Southern Industrial Relations Conference, Blue Ridge

TWELVE HUNDRED industrial supervisors, foremen, and other key personnel attended the 41st Annual Southern Industrial Relations Conference at Blue Ridge, N. C. Many delegates heard panel chairman **Alvin S. Davis**, Callaway Mills, emphasize that every business needs a planned employee selection program. Selection, placement, training, and maintaining an effective human organization is one of the most important functions of management, he said.

The discussions in this session were confined to three of the most important phases of employee selection: (1) Establishing requirements of the job; (2) Recruiting qualified applicants; (3) Screening applicants.

A. T. HANSON, West Point Manufacturing Co., told those present that studies of factors that correlate highly with success on the job include: (1) Application blanks—form and content; (2) Investigations of background and work history; (3) Use of references; (4) Aptitude and achievement tests; (5) Systematic interviewing; (6) Analysis of performance and turnover records; (7) Training of employment office managers and personnel.

Any executive or employment

manager who wants to improve the effectiveness of the hiring procedure may do so by using systematic and scientific employment methods, by keeping records, and by statistical study of these records, he said.

T. W. LAUDERDALE, Union Bag-Camp Paper Corp., suggested properly selected, administered, and interpreted tests to determine something about a prospective employee's aptitudes, skills, and interest.

After analyzing jobs to fill, determine characteristics necessary for successful performance. Then find the tests that measure these characteristics, Mr. Lauderdale continued.

A good test must be reliable in giving the same score consistently under similar conditions. It must be valid by measuring what it was designed to measure.

Proper administration of the test is exceptionally important. Physical facilities should include good lighting, adequate space for writing, good ventilation, and normal temperature. Instructions should be clear.

Although tests can be helpful, companies should not rely too heavily on tests and ignore interviews, application blanks, and

work history information.

Union Bag uses tests for initial selection of employees and for transfer and promotion. For example, if a person was hired in a beginning job, he would take a non-verbal learning ability test, a mechanical comprehension test, a manual dexterity test, a short personality test, and a math test.

If this person elected to transfer to a maintenance job, he would be given an additional, more comprehensive mechanical test, a color blindness test for electricians, besides also requiring additional education and experience. If this same person was considered for a supervisor's job, he would take a verbal learning ability test, an interest test, and two or three personality tests.

The higher up the executive ladder you go, the more difficult it becomes to predict successful performance.

Tests must be properly selected, intelligently administered, and interpreted by someone who knows their assets and limitations, Mr. Lauderdale concluded.

J. W. JELKS, J. P. Stevens & Co., Inc., told the group a skilled interviewer must develop an approach which he feels best fits his personality and which he finds to

be most effective. The interviewer must know human nature, job requirements, abilities required in many types of work. He must work with the variables of human nature, human ability, and experience.

The minimum requirements necessary before the interviewer can successfully carry on his work include an office large enough for two persons to sit and talk in comfort. The office should be private and reasonably free from outside disturbances or interruptions. It is of vital importance that an informal, pleasant, and sincere rela-

tionship be established in an interview, Mr. Jelk emphasized.

DR. NICHOLAS NYARDI, former minister of finance of Hungary, told the group in general session that the present American dilemma comes from strained U. S. foreign relations; dangerous federal control of education; and inflation and spreading socialism.

Other subjects discussed during the conference included management training, employee appraisals, labor relations, grievance handling, human motivation, and community relations.

should be just a little more than required.

Now he just opens the cutoff valve, and in a very short time the new pressure is found and recorded in his log as was previously done. The water level can be computed from the known air line length and the reading just obtained. This is the same as the old method.

One word of caution, that is in the bubbler rate. It should be no more than a pneumatic type level recorder.

The operator really likes this new getup. The results are also more consistent and uniform. He still carries his hand pump for a standby, but you can bet he keeps a watchful eye on his bottle capacity gage and keeps the store-room informed as to when it needs a refill.

Water Well Checking Apparatus

ANTIQUATED methods of getting pressure readings on air lines in water wells have given way to better procedures.

Up to about a year ago pressure for our air line readings were obtained by a hand pump. The well tender carried the hand pump and would hook up to the desired well and then proceed to pump away until the gage needle would stop. This would give him the desired reading.

In a plant with a large number of wells of varying depth this task gets quite monotonous when done weekly. And when the pump wears out a little, you begin to doubt the results.

Some daily readings became necessary and were included on the agenda. The thought of this additional chore on a daily basis for a number of our wells under surveillance didn't set just right with the well tender. Besides "a man gets a little older and should be given some consideration to ease his labor."

With air line connections installed in the well hole, including a quick connector, the conversion to our new system was made very readily. To replace the pump we have provided a bottle of liquified inert gas mounted on the well tenders' truck. To complete the testing rig there is an adequate

length of small diameter tubing attached to a manifold. This manifold is composed like an "airset," namely a bubbler and a needle valve.

The bottle is provided with a set of service gages, one of which is used to set the pressure as described later. We use Argon gas, although compressed or liquified air will work. *Caution: Do not use oxygen.* On the loose end of the hose we have a mating connector, and for convenience, another small cutoff valve.

From the hand pump method we already had the old gage which we mounted on a separate piece of piping with proper connectors between the hose and the well air line.

We changed and made this separate, because we replaced the standard pressure gage with a gage of smaller range, and also the type called a test gage. (Foxboro and others make good ones at reasonable prices.)

The well tender when ready takes the test gage from its carrier and snaps it on in the position required. Then he snaps the air supply hose in place. This is all similar to the hand pump method.

From previous records the well air line pressure is known and will give him some idea of what pressure is required and of course it

G. E. Seminar—New Orleans

More than 125 engineers from major petroleum and chemical companies in the United States are expected to attend General Electric's second annual turbine seminar in New Orleans on Thursday, September 22, in the Hotel Roosevelt.

According to S. Wellford Corbin, Manager of G. E.'s new Industrial Sales Operation, "the success of our first turbine seminar held in Houston last September led us to plan another session this year."

Objectives of the seminar are to present information on new turbine application and engineering developments and to encourage an exchange of ideas between representatives of the petroleum and chemical industries and key marketing and engineering personnel of General Electric. Invitations have been sent to engineers of the petroleum and chemical industries and to process contractors who are engaged in the economic evaluation, selection, and operation of large pump and compressor drives and power generator equipment.

Representatives from General Electric's Turbine Division and Apparatus Sales Division will present papers during the day and participate in the informal discussion periods. The seminar will be concluded with a banquet at which Mr. Corbin will be the featured speaker.

Oil and Grease Applications Simplified

FEW PEOPLE have any idea of the size and production capacity of General Electric's Appliance Park, located eight miles south of Louisville, Kentucky, on land that was given over to corn crops less than a decade ago.

Appliance Park buildings contain more than five million square feet of floor space. A major appliance is completed for shipment every two and one-half seconds. The Park has 45 miles of conveyors; its power station generates enough electrical energy for a city of 320,000 people.

Appliance Park is much more than space, raw materials, fabricating machines and power — it is people, too, as exemplified in the Range Department, one of five lo-

cated at the Park. Housed in a building large enough to hold Yankee Stadium, this Department produces more than 1,600 ranges daily to lighten the load and brighten the day of America's homemakers.

In such a mechanized facility, according to W. G. Montgomery, Superintendent of Building, Tools, and Equipment for the Range Department, machines do the hard work, but this makes it all the more important to keep the machines operative. This calls for training and teamwork on the part of all employees.

No Allowance for Downtime

For this reason, Mr. Montgomery, as Maintenance Superintend-

All of the equipment in the multi-million-dollar Range Department facility in G-E's Appliance Park, Louisville, is lubricated with six basic lubricants applied by three oilers.



Mr. Montgomery tells how General Electric Company handles maintenance at Appliance Park.



ent; the Superintendent of Shop Operations, W. C. Watson; G. F. Chadbourne, Manager Manufacturing Engineering; and R. C. Ludwig, Materials Manager, have equal responsibilities under the Manager of Manufacturing, Gordon F. Kelley.

The production schedule, using some 150 tons of steel daily, makes no allowance for machinery downtime, so the job of maintaining this equipment is a truly critical one. As evidence of the plant's rigid production schedule, inventory turns over at the rate of 21.3 times per year.

Maintenance Program

"To keep my side of the operation under control," Mr. Montgomery says, "I have a maintenance program which is founded on three fundamental factors: proper engineering, employee knowledge through G-E training, and proper lubrication."

"The plant was engineered to

produce but we didn't have a trained force to maintain it," he says. "We had to train employees to be electricians, plumbers, millwrights, etc., all these skills being taught to each man.

"In such a highly mechanized facility, there is no room or opportunity for lack of knowledge or training to hide behind one craft. If something stops production, the cause is determined and removed by the person on the scene — whether the problem is in the electrical system, mechanical system, or what have you."

No small factor in putting this plant into production was the establishment of a school to train 56 maintenance men in the variety of skills they now have. Such training involves special courses directed by plant employees with high degrees of proficiency in their special crafts. Courses are given by the company in an area set aside in the Range Department building for training.

The reason for the accent on training is obvious, even after only a casual tour of the plant. The facilities are completely engineered, in every sense of the word. Each line is timed to mesh with other successive phases of the manufacturing operation. Twelve miles of conveyors carry components from station to station in the Range Department.

"This plant is like a long chain," says Mr. Montgomery. "Break a link, and from 15 to 400 production people are idled, depending upon where you do it. Steel begins to pile up behind you. The balance of component manufacture runs askew.

"That's why we emphasize the importance of training."

Lubrication

No less important, according to Mr. Montgomery, is lubrication of the equipment — an extremely important element in his plan for scientific plant maintenance.

"Up until four years ago," he says, "we were getting confusion rather than lubrication. But during the last four years there has been practically no machine downtime due to faulty lubrication. The reason we have been able to achieve that record is that we have attacked this problem as



There are over 400 points of lubrication on the range body forming and assembly line, yet only six lubricants are needed to meet all requirements.

scientifically as we did the engineering of the plant and the training of people to maintain it."

The confusion the superintendent refers to resulted from a not uncommon error discovered by lubrication engineers: Too many lu-

bricants, in some cases one for each specific requirement, rather than a few carefully selected lubricants which permit broad application capability.

The original stocks of oils and greases for the plant were pur-

Where the conveyors take material past batteries of heat lamps like this, a special heat resistant grease is used.



chased, more or less, on the basis of the many and varied lubricants suggested by the manufacturers for each individual machine. "In a plant with 480,000 square feet of equipment," says Mr. Montgomery, "you can collect quite a number of lubricants to do quite a number of specific jobs."

"But your possibility of getting the right lubricants to the right spots at the right time diminishes in direct proportion to the number of lubricants and machines you have."

Studies and Standards

Determined to reduce this problem to a manageable size, the maintenance superintendent invited a Gulf lubrication engineer to survey the plant. The survey was designed to produce a practical plan by which every piece of equipment in the plant could be lubricated at the proper time with the proper lubricant.

The job took weeks to complete. Each piece of equipment in the plant — whether free-standing or a part of a line — was catalogued. For each of the various lubrication points or systems on each of the machines, recommendations were made as to the type of lubricant to be used and the timing of the application.

Once this had been done, the entire plant was divided into three lubrication areas: major and miscellaneous fabrication; the conveyor, enameling, plating and painting lines; and the assembly and Calrod manufacturing lines.

Dividing the work in this way resulted in three one-shift lubrication jobs. Charts were made up showing the G-E catalog number of each machine, the points to lubricate and the correct intervals between applications.

When all the pieces of the lubrication puzzle had been assembled, it was found that the total number of plant lubricants was reduced from dozens down to six.

As a result, the lubricating job on the largest single piece of equipment in the plant looks simple — and is. This machine is an 850-ton Clearing press which can produce 300 range bodies (flat) per hour. It forms flanges, makes door openings, completes indentations

and cuts holes, all in one operation.

Chart Calls Shots

By examining his lubrication chart, the oiler knows that the crown reservoir, the pneumatic die cushion and air line lubricators are to be checked weekly and filled with Gulf Harmony oil as required and the same lubricant is used for all points to be hand-oiled. Gibs, slides and the central lubricating system are checked daily and lubricated. The central grease system for the press is checked daily and filled with Gulf-crown grease. The same grease is used for hand application.

And so it goes, throughout the plant.

Such sealed oil systems as those for hydraulic power and for lubrication of gear reducers are changed every year during the two-week shutdown in mid-summer. Thus there is no interruption to plant operation for major or minor lubrication jobs.

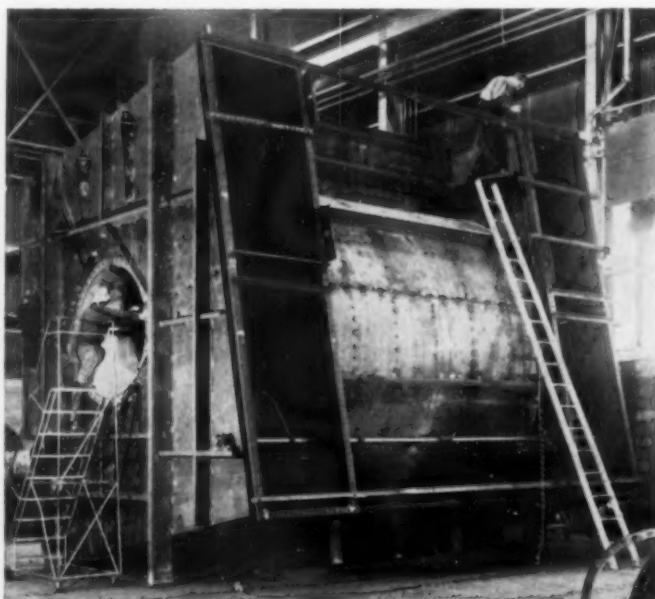
"The results of scientific lubrication plans such as we have in the Range Department," Mr. Montgomery says, "provide many advantages besides better protection of equipment. Our lubricating crew operates more efficiently and human hands have been freed for other work. With fewer lubricants we can maintain a smaller inventory without being caught short. At the same time we have reduced purchase costs."

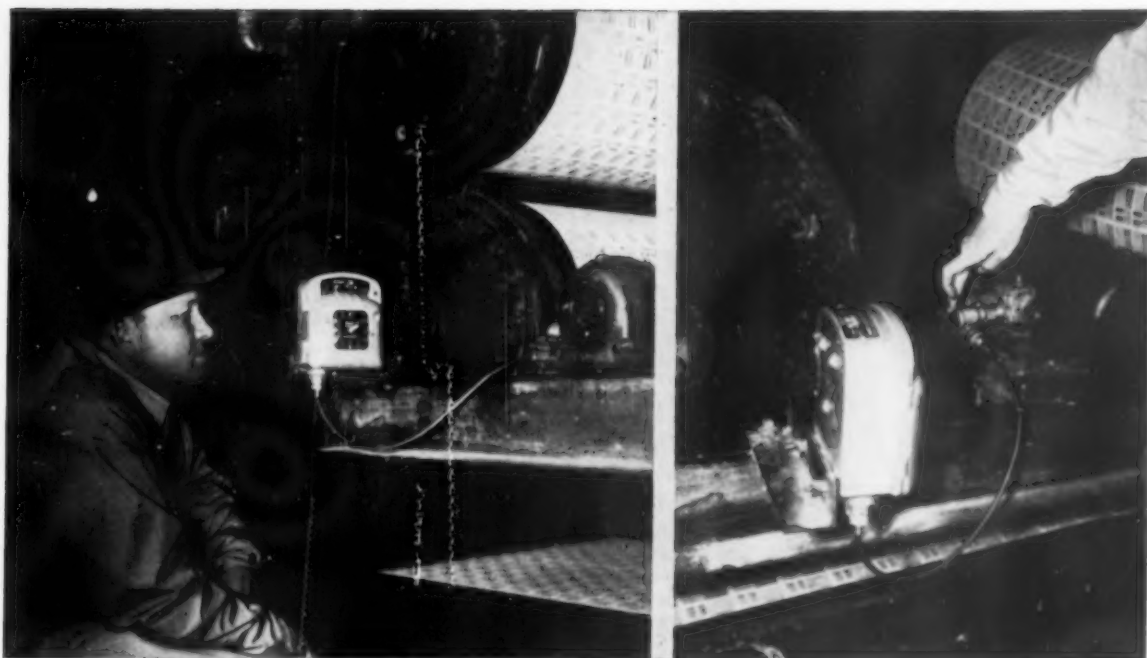
Fans for Union Electric

Under construction by the Westinghouse Electric Corporation, this large induced draft fan will soon be in service at the Union Electric Company's Meramec Station in St. Louis, Mo. It is one of two identical induced draft fans being supplied for this application and measures 20 by 27 feet at the base and is over 20 feet high. In operation, these fans will each handle up to 1,000 tons of air per hour at 210 F and 17.7 inches head pressure.

Induced draft fans are used to provide draft in the boiler fire box in the electric utility's coal burning power station and to carry combustion gasses to the chimney.

The fan wheels will measure over nine feet in diameter and have Airfoil shaped blading for maximum operating efficiency. The semibly rotates on a shaft with a hub diameter of 23 inches, requiring two, ten-inch sleeve bearings. These fans are unique in that they include automatic vane control at the inlet which varies the amount of gas entering the fan to permit efficient operation at partial loads.





W. L. Carter, superintendent of dyeing and finishing, observes Tachograph (Sangamo Electric Co.) installation on finishing range. The Tachograph drive is simple and is geared directly to the production machine. Calibration is in accord with production per revolution.

North Carolina Finishing Plant Reports

Use of Time Recorder to Monitor Operation

AT RANDOLPH MILLS, Franklinville, N. C., last summer, the second shift in finishing was 15,000 yards behind in production within two months. Tachograph charts showed the wash range machine was standing idle too long each time the drain water had to be replenished in the washer.

The situation was corrected, and the machine was back up to production in two weeks as a result of the record charts which indicated the trouble on the Tachograph.

The machine involved in this instance is used to wash print gum, excess color, and acid fumes out of the fabrics. Thirty-two cans (drying rolls) are used for drying, and there are nine compartments for washing. Compartments 1, 2, 3, hot soap the goods. In addition, there are three lukewarm rinses, and three rinses in cold water.

The range runs 75,000 yards in

24 hours at peak on 36" flannels and broadcloths.

The Tachograph embodies a clock face and a recording dial driven by a shaft on the machine being monitored. The chart in the clock is changed every 24 hours by the superintendent. If the machine stops, the recording dial indicates the time it stopped and how long the machine remained idle. In operation for two years in this plant, the instruments are well worth-while, according to the mill officials.

At first, there was a little trouble with the drive head breaking drive cables. Now however, the last change has been in service for one year with no trouble to date. Maintenance is negligible.

Three of these instruments are in service at the Franklinville plant; one on a washer and two on tenter frames where the cloth is

run to control width. The recording dial is operated from a drive shaft connected directly to the production machine, and the instrument is calibrated according to production per revolution of the drive. The standards manager and industrial engineering department use charts for recording results and making time for analyses.

The supervisor of the department in the finishing and printing plant examines the charts as he removes them from the clock. Only the supervisor has a key to the clock, and a key is required for access. The mechanical clock has to be wound every 24 hours, and the supervisor winds the clock upon replacing the chart.

Well worth the investment, the instruments are good from the psychological viewpoint too, according to W. L. Carter, superintendent of dyeing and finishing.

MANAGEMENT

Conducted by ROBERT H. EMERICK, North Charleston, S. C.



How to Make a Fire Safety Survey

Question

CAN WE MAKE a dependable fire safety survey of our plant with our own personnel, or should it be done by a professional?

Suggestions

PROFESSIONALS as employed by the fire insurance companies will provide a far more comprehensive survey than can be expected from the relatively inexperienced plant man. However, here is a sequence of fire checking questions that any plant engineer can answer.

1—"Who, or what, is going to detect a fire, and how soon after it starts?"

We suggest the installation of automatic fire detection equipment that not only sounds a warning in the plant, but releases an alarm in the nearest municipal fire station. Automatic detection is particularly important in a plant that has been shut down for the night or over a holiday. Even with a watchman on duty, he simply can't be everywhere at the same time.

Recently we observed the destruction of a big wood-working plant. The building was 200 feet long, and the fire started in the short time between the departure of the day shift, and the arrival of the nightwatchman. Against such speed of propagation, early detection and immediate action are vital.

Question 2 of the survey is, "What will stop a fire from spreading through the plant from its point of origin?"

Probably a fire wall is our best assurance of containment. The wood-working plant already referred to had no fire walls, and it was flaming from end to end in less than 20 minutes. In another instance, we watched flames take over a warehouse the length of a city block in no more than 15 minutes. Fire walls in both of these cases almost certainly would have prevented a total loss.

The presence of a sprinkler system is no guarantee of containment, by itself. Bits of combustible materials often tend to pop and jump as they torch off, thus carrying the fire from a sprinklered area to another and tending to spread the fire. For another reason why sprinklers sometimes are not enough, let's look at survey question No. 3. It goes like this:

"Is the volume and pressure of our water supply adequate to meet full fire fighting demands for an hour or more?"

To answer this question we must assume that a pumper or two will be supplied from the plant water main, or from a street main that also supplies the plant. Will there be enough water to supply a couple of 500 gpm pumpers and the sprinklers at the same time? We just could find the mains too small, and will have to do something about it.

There is also the possibility of mud, silt, rust and such undesirables clogging the piping of a long unused, underground, fire plug system. We have seen fire hose nozzles, directed at a blaze, do nothing but drip on the fireman's feet. Obviously such a condition means that the answer to Question 3 is unsatisfactory.

To summarize, good fire protection means quick detection, reasonable fire containment, and adequate water at an adequate pressure. A fire safety survey should evaluate these three factors as a minimum of essential information.

PLANT ENGINEERING

Course of Study Needed

COLLEGES today are bypassing one of industry's most needed courses of study — that of plant or maintenance engineering. However, there are a lot of good courses being offered today under the sponsorship of the various schools of engineering and it would be only a simple matter of assembling the courses in such a manner that a creditable degree in plant engineering might be achieved.

In addition to the generally accepted meaning, engineering is also defined: "To manage or bring about with skill; to manipulate." Manipulation is actually the most suitable summation of the duties of the plant engineering department.

Design engineers design, while maintenance engineers adapt. Design engineers create the situation — maintenance engineers are stuck with it.

In new construction, designers have an ample opportunity to study, experiment and select; while in maintenance, time is of the essence. It is mandatory that a solution be worked out with the least expenditure and in the shortest time.

Broad Field

The plant engineering office, in a large percentage of the industrial plants today, is the central headquarters for all matters pertaining to building, yard and machinery maintenance, power plants, and field engineering. This office should contain all of the pertinent information and data that is necessary for the operation, the maintaining, and the reordering of the parts for all machinery located throughout the plant.

It should have the latest up-to-date filing methods and cost accounting systems as far as the maintenance of the various items is concerned.

It should contain the drawings along with the specifications that have been issued from the plant office. There should be copies of blueprints received from vendors, instruction manuals, training methods, and it should be able to answer (or find answers for) all questions involving the carrying out of the facilities for the operation of the plant as a whole.

How this information is assembled and maintained is up to the individual plant engineering office, but it should be as simple as possible so that someone who is completely unfamiliar with the way that the system has been devised would be able to find without too much difficulty any information that he might require.

Plant engineering, not being an operating department, is not usually considered as part of the profit making end of the business, but those who are familiar with the functions of this group realize that from this area can come the means by which the difference between profits and expenses may be broadened considerably.

Sound Programs Needed

More and more industries today are realizing the advantages of good, sound maintenance and engineering programs, and a great deal of money is being expended to broaden this field extensively. A lot of the old type industries that previously have debunked these facilities as unnecessary to their particular operation are gradually coming around to the



By R. L. CRAWFORD

**Plant Engineer
Fulton Cotton Mills
Atlanta, Georgia**

MR. CRAWFORD was graduated from Clemson College with Bachelor of Mechanical Engineering degree and Armstrong Junior College in Liberal Arts. He is a registered Professional Engineer in Florida and Georgia and a member of several engineering societies. He has previously worked with Bethlehem Steel Co., Union Bag & Paper Corp., and Tennessee Corp.

fact that in order to meet competition and stay in business, they will have to seek help in decreasing their expenses and improving their products.

Just how well the plant engineering office functions depends upon the experience and training of the plant engineering personnel and the attitude of management.

There are thousands of engineers who are directly or indirectly involved in some type of plant or maintenance engineering. These men, who are in this field either by choice or by other twists of fate, find themselves rather poorly equipped to handle all of the problems and duties that develop. They begin to believe that they would probably have been better off had their choice of activity been something other than what it actually was. Even though this is probably true in certain remote

cases, it can safely be stated that no course as such offered today would be really adequate.

Of all the courses of study available today, the one that probably comes nearest to the ideal is Mechanical Engineering. This deals thoroughly with the operation of boiler and power plants, engines and machinery, air conditioning and refrigeration; but not quite so much with structural materials, electrical equipment or some of the chemical aspects of plant equipment and operation.

With less emphasis on the technical design courses, complete elimination of others plus the probable addition of another year, a well developed curriculum of plant engineering could be inaugurated.

Such subjects as production layouts, material handling, building construction and maintenance, fire protection alarms and equipment, communication systems, electrical lighting and power distribution, and some other less important but essential subjects are a few that should be covered in some manner during this time.

Depending upon the size of the plant, the subject of safety is one that could be quite time consuming. Being a department head, the plant engineer is naturally concerned with the safe conduct of his own area, but in smaller plants or plants without the aid of safety departments or supervisors, he is called upon to express recommendations on types of safety and fire equipment, furnish and train emergency personnel, consult with fire and safety inspectors, and design for the elimination of hazards.

Business law and contracts are requirements under certain curriculums and act as an aid to the student in future practice. Although some plants are fortunate enough to have legal representation, it is still an asset to be able to understand all of the ramifications involved in the making up, carrying out, and the liabilities in-

cluded in the intricacies of contracts, performance bonds, insurance requirements, etc.

Legal training and a thorough knowledge of the laws pertaining to wage and hour are also invaluable for those who may have dealings with problems arising from union contracts. A great percentage of these grievances or misunderstandings can be eliminated long before the arbitration point if handled properly — possible only through understanding of the "cans" and "can'ts" of the relationship.

Personnel Problems

Employees expect to be able to find out from the foremen, and

the foremen from the department head, all about matters pertaining to the rights and privileges available and information as to job protection through workmen's compensation, and other types of job insurance.

The plant engineering department should acquire and maintain sufficient records in an understandable form so that information is readily available on numbers and types of absences, reprimands, employee evaluation, etc., to form the basis for and the backing of action taken in particular cases.

Organizational training and methods of determining the number and type of classifications required to perform the function of



A well balanced system of records and supplies is essential — the right records and the right supplies. Too much of either is a waste of money, and too little can prove disastrous when trouble strikes.

the department would be quite a helpful addition to the curriculum.

Time and again the question of job loads, standard complements, job descriptions, and other items will be brought to the fore. Not only is this necessary to establish the most efficient set-up, but also to satisfy management of the needs for certain areas of the organization. An explanation to the employee as to what his duties are and how he fits into the overall plan is essential.

Plain, general psychology should not be excluded during this foundation building. There is always a great need for the understanding of people — why they are the way they are; their ups and downs; the many factors that affect their work and efficiency and even safety on the job. The handling of one relatively slight problem may mean the difference between an ultimately excellent or ultimately poor employee. Psychology and the analysis of problems play

important roles in the successful management of any program. Ability along these lines is especially helpful to the plant engineer in his dealings in all directions.

Fundamentals

Economics, cost analyses, profit and loss, budget systems, and a never ending list of other subjects could be outlined that would be valuable assets in this field of engineering management. We are often bogged down, however, in tedious theory that, not used, is soon forgotten. Such time could be used to definite advantage in the explanation of basic fundamentals that are applicable and vitally needed, and upon which more detailed knowledge through actual experience can be gained.

All of the above courses are available in some form or other and an excellent program could be developed by giving some thought to the type of training desired and the method of application.

Exhaust Purifiers Aid Handling in Virginia Chemical Plant

CATALYTIC exhaust purifiers are valuable assets in lowering materials handling cost at the Nitrogen Division plant of Allied Chemical & Dye Co. in Hopewell, Virginia. Gasoline powered fork trucks and tractor-shovels have been equipped with purifying units.

The Materials Handling Section cites safety, economy and versatility as the advantages which have resulted from the use of the exhaust purifying devices furnished by Oxy-Catalyst, Inc. The plant safety engineers have approved them for use, with periodic inspections, inside closed storage buildings and warehouses. Employees can now work inside the buildings without danger of ill effects from exhaust fumes.

The same equipment which is used inside the buildings can also be used for materials handling outdoors. This results in the company

getting maximum benefit from its investment.

At low cost, the catalytic mufflers make the exhaust harmless to human beings. In effect, the mufflers make gasoline and LPG powered equipment suitable for use under practically any conditions. The only change necessary in gasoline powered equipment is the use of white instead of leaded fuel. Lead will poison the catalyst. With LPG powered equipment, no change in fuel is necessary.

At idle speed, 97.3 per cent of the monoxide is converted into carbon dioxide; at governed speed, elimination of carbon monoxide is 92.2 per cent. A good average for units installed in the field is 95 per cent reduction. Clean-up of irritating exhaust hydrocarbons is equally efficient.

Catalytic exhausts are practically maintenance free. The main requisite is that the engine itself be



in good operating condition. The catalytic element is long-lived — at least 2,000-25,000 operating hours in most cases. The catalyst coated cartridges can be replaced on an economical exchange basis.

Heart of the catalytic exhaust is the Oxycat, a cartridge containing 71 porcelain rods coated with an effective oxidation catalyst. Each cartridge measures roughly 3 inches square x 5 inches long. The rods are all tear-drop shaped in cross section to minimize back pressure. They are staggered in position to present maximum surface for combustion of the carbon monoxide and other combustible vapors (mostly hydrocarbons) as the exhaust flows across the rods.

The catalytic reaction which oxidizes the unconsumed carbon monoxide and hydrocarbons takes place at the surface of the rods. The accompanying photograph shows a six-section catalytic purifier installed in an engine compartment. The compact units can be fitted inside the engine compartments of most gasoline powered equipment with very little trouble. They simply replace the regular acoustical muffler.

Construction to Start on Port of Miami

Construction on the new \$20 million Port of Miami will start early this fall.

The City of Miami has turned over property deeds for the 187-acre Dodge Island port site and the 36 acres of present lands to the Metropolitan-Dade County Commission. A bill providing \$3.8 million for Federal dredging work on the new port has been signed. The Metro Commission has allocated \$2 million in its 1960-61 budget for initial construction work on the port.

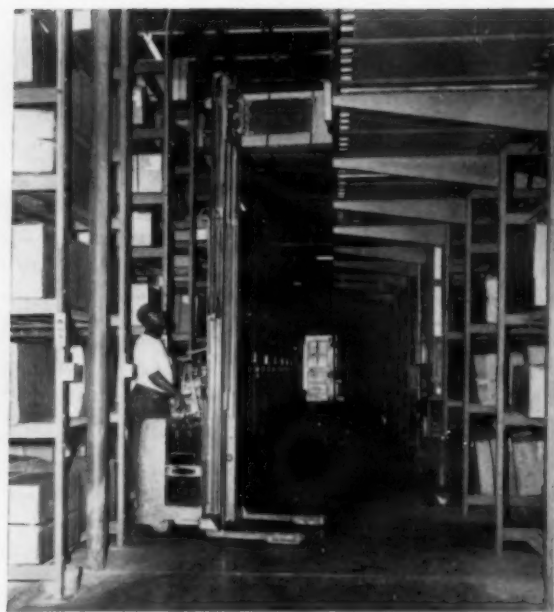


Fig. 1. Left—Strapping machine and new conveyor leading from it to the new warehouse. Fig. 2. Right—Lift operator shown placing carton on conveyor. Next, he will take a case from the conveyor for storage.

Combined In-and-Out Handling

A NEW AND MODERN 50,000 square foot warehouse has been in operation at the North Carolina Finishing Company since last March and has proven to be quite satisfactory. The building is 220 feet x 224 ft and the loading platform is 100 ft x 40 ft. Eight and one-half miles of steel shelving is in use.

As with most finishing plants, the Company has had inadequate finished goods storage facilities for many years. Goods were stored in ten different locations in the plant and required about 70,000 square feet or over 4 square feet per carton. All of these areas were crowded. Consideration was given to renting warehouse space in town, but each time this was considered, so many problems arose that extra effort was put forth and a few more square feet were found in the plant.

The cost of warehousing was very high. Most cartons were man-handled with the aid of low lift

fork trucks, but many of the locations had ceiling heights of under 7 feet, making it impossible to use lift trucks. No racks were used, and cartons were piled up one upon another. Carton damage was high because top cartons had to be moved to get to the carton to be shipped. (The law of averages did not apply in this situation — the carton to be shipped was always on the bottom.)

Keeping track of the carton location was very difficult because of the frequent moves necessary to get down to the carton to be shipped. Two full-time men were used to keep the location file current. Confusion — yes! Frequently the customer suffered because it took an extra day or more to locate missing cartons.

Decisions to build warehouses are not made overnight. Warehouses are not profit makers. Some of the questions that had to be answered were:

1. Can we modify our existing

By **M. D. ROCHELLE**
North Carolina Finishing Company

warehouses and do a satisfactory job? If not, what will we do with the existing warehouses when the goods are moved into the new warehouse?

2. How much area do we need? How high should the building be? What should the aisle dimensions be?

3. What material handling system shall we use? What type of conveyors? What type of lift trucks?

4. What type of racks? Adjustable or not adjustable?

5. What are the average sizes and weights of the cartons and the extremes?

The questions above were only a few of those that had to be answered. After much research, many visits to other plants, and talks with suppliers, a plan was

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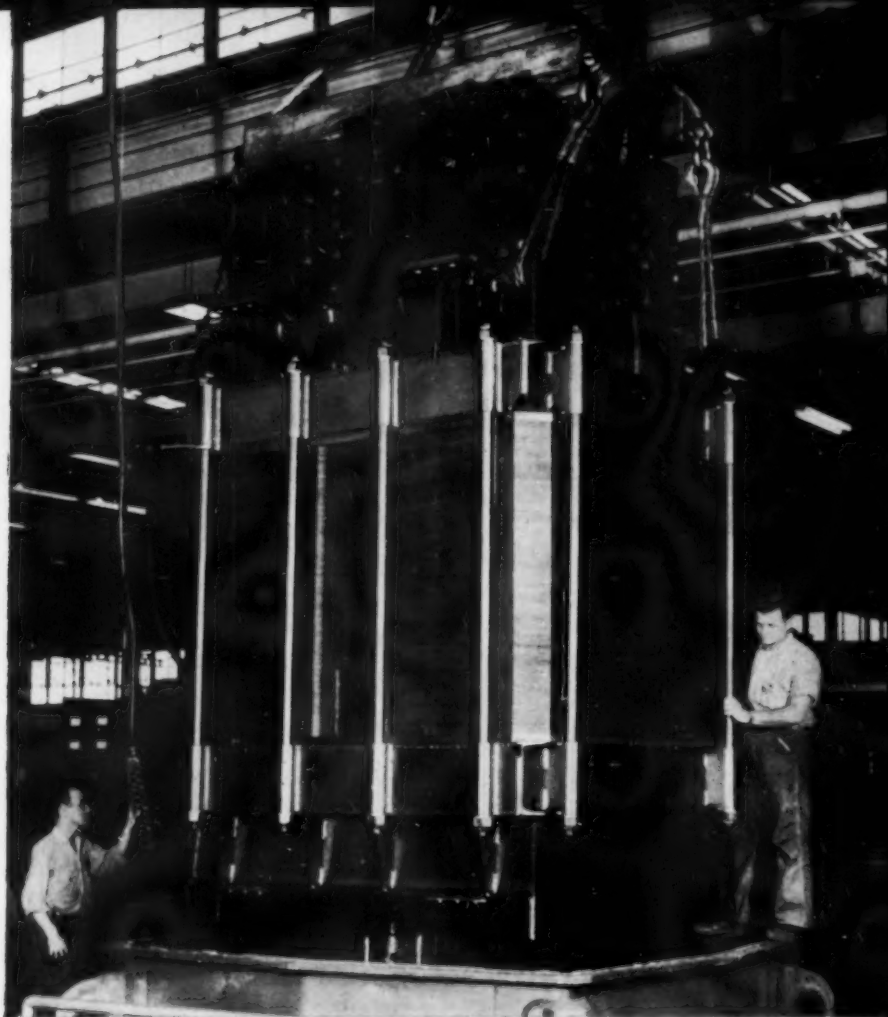
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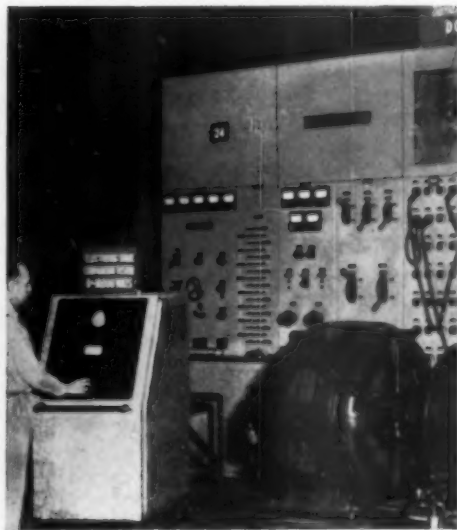
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Fig. 3. Left—Typical aisle showing cartons stored in racks.

developed. Of course, it was changed many times.

A building 220x224 feet fit nicely into an area adjacent to our packing section. It is about 20 feet from the main building and is joined by an enclosed ramp. The finished goods travel by gravity and powered conveyor from the strapping machine into the new warehouse (Fig. 1). The cartons travel sidewise on this conveyor so that the carton numbers will be facing toward the lift operator. The conveyor belt, 4 feet wide, runs the length of the warehouse at a height of 11 feet above the floor. This height is necessary to allow lift trucks to pass under them.

Cartons going to storage and those going to the shipping dock ride the same conveyor belt side by side. Starting and stopping the conveyor can be controlled from each of 16 aisle locations.

The racks have seven shelves with the top of the highest shelf 15 feet 7 inches above the floor. Shelves allow for individual carton selectivity. Rack openings determined by study of cartons vary from 24 inches to 36 inches. Double racks are 6 feet 9 inches wide and spaced on 14 foot centers. This allows for an 8 inch over-

hang of opposing cartons and a 6 foot aisle which is adequate. Racks are in 10 foot sections, and each row has twenty-one 10 foot sections.

The conveyor is hung from the racks above the 10 foot aisle. There are 15 rows of double racks and 2 rows of single racks making a total of 16 lateral aisles. Racks are numbered by rows from east to west. Each 10 foot section has a letter assigned beginning with A. Shelves are numbered from floor up. Thus locations are definitely indicated designations such as 15-T-3.

The lift trucks are straddle, stand-up type having a lifting height of 192 inches and a collapsed height of 117 inches. Their forward speed is 4 miles an hour, and lifting speed is 45 feet a minute. The trucks have a 24 volt electrical system and are very maneuverable. The clamp attachments are regulated for pressure so that cartons are not crushed in grabbing and lifting.

Normal procedure for the warehouse lift truck operators is to be putting cartons into storage and pulling cartons to be shipped in the same operation. Cartons to be shipped govern the operation.

As orders are received for ship-

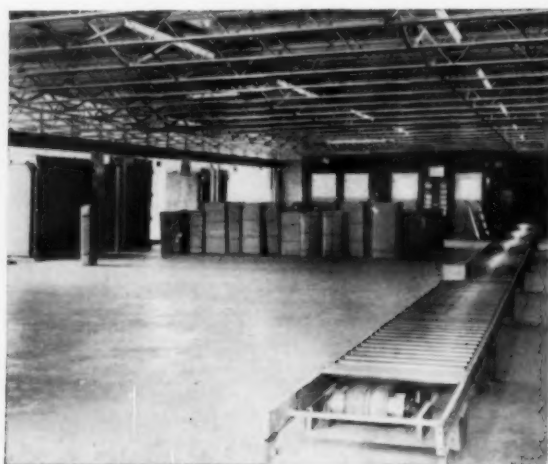


Fig. 4. Above—Cartons on loading dock conveyor having come out of the warehouse. Here they are labeled and hand-trucked to trailer on left.

ment, the Shipping Department gives the locator cards to the warehouse clerk. The clerk then goes through the warehouse and puts locator cards in small boxes at the end of each aisle. The lift truck operator starts at one end of the warehouse and works one aisle at a time. He picks the shippers from the racks with his clamp truck and puts each carton in the overhead conveyor (Fig. 2).

He then picks off a case from the conveyor going to storage and stores it near the location of the next shipper. The trucker then marks the location on the locator card of the carton just stored, moves a few feet and picks up the next carton to be shipped. The carton to be shipped is then put on the overhead conveyor, and he picks up another carton to be stored—until he has completely shipped from one aisle. Fig. 3 shows a typical aisle with cartons stored in racks.

The conveyor makes a 90 degree turn on a powered curve section when reaching the west wall and travels south to the loading platform. When it gets to the platform it takes another 90 degree turn on a gravity curve section and runs east the entire length of the platform.

The shippers stay on the conveyor until they reach the loading dock. At this point, the shipping

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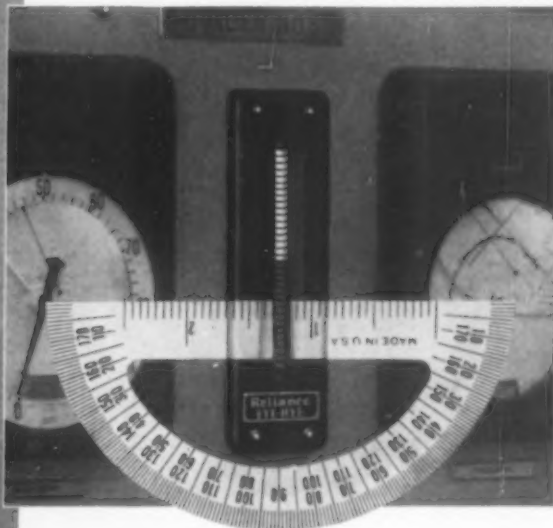
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BOILER SAFETY
DEVICES

label is attached and the goods are hand trucked into the waiting trailers. The truck dock measures 100 feet long by 40 feet wide, and built at one end of it are an office and a waiting room and toilets for truck drivers.

Fig. 4 shows cartons on loading dock conveyor having just come out of the warehouse. They are being labeled and hand trucked to trailer on the left. The offices and toilets can be seen in the background.

Just inside the warehouse from the loading dock is a mezzanine measuring 28 feet by 40 feet. This is used for the storing of small packages weighing less than 75 pounds. These packages are not handled by the lift truck operators but move on the conveyor from the Packing Department all the way to the mezzanine section at which time they are taken off and hand carried to the racks. The battery chargers and maintenance equipment are located on the main floor under this mezzanine.

Safety is built into the conveyor system. At each aisle location, there is a pushbutton station on each row of racks which has three settings:

1. Indexing — which moves belt 36" when a carton from the strapping machine comes on to conveyor.
2. On—which moves belt continuously at a speed of 50 feet per minute.
3. Off—which stops the conveyor, and a red pilot light comes on at all pushbutton stations.

When the lift truck operator desires to remove a carton he moves the selector switch to the "Off" position. In the "Off" position the conveyor cannot move under any circumstances nor can it be started from any station except the station where it was turned off. This feature eliminates the possibility of the conveyor being started while a lift operator is just starting to clamp or release a carton on the conveyor and possibly turning his machine over.

An interesting note is that the main floor of the warehouse is 7½ feet below the floor level of the shipping dock and 3½ feet below ground level at the shipping dock. This design was developed mainly

because of the existing ground levels and enabled us to build the warehouse with a minimum of excavation.

The building is built of 8" jumbo brick and has a concrete floor which has a hardener in it to prevent dusting. The roof is built of plywood covered with tar and gravel and has a 20 year guarantee. The shipping dock is open and has an 8 foot overhang to prevent driving rains from coming in. Fluorescent lighting is used, and the illumination is about 12 foot-can-

dles. The building is provided with automatic sprinklers.

The operation of the warehouse has been very successful. Deliveries are speeded and better customer service is assured with considerable savings in labor and sharp reduction in the number of damaged cartons.

Suppliers of principal handling equipment included: conveyors and storage racks — Engineered Products Co.; lift trucks — Raymond Corp.; strapping machine — Acme Steel Strapping Co.

Radiant Oven Dries Furniture

THE FIRST RADIANT oven in the

history of furniture manufacturing capable of handling a wide range of sizes and shapes is drying the final lacquer finish on dressers, chests, desks, bed headboards, night stands and other pieces at the Louisville, Ky., plant of the Kroehler Furniture Mfg. Co.

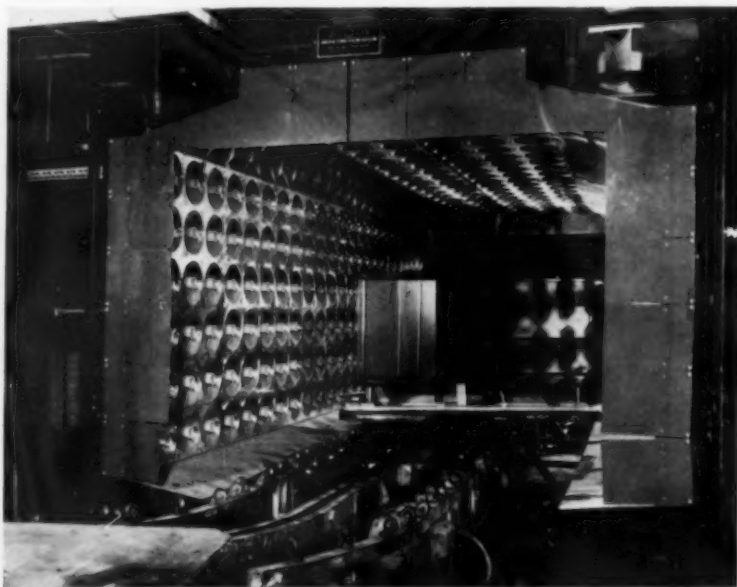
By a combination of multiple temperature zones and product rotation, the final sprayed-on lacquer finish is dried quickly and evenly on all sides.

The pieces of furniture are placed on pallets on the conveyor line before they reach the spray booth. After spraying they enter a flash-off tunnel with a backward-moving forced air exhaust. After 20 minutes in the flash-off tunnel,

the pieces enter the oven, where the drying time is only four minutes, as compared with many hours which would be required for air drying. The pieces revolve several times a minute as they move through the oven on pallets. They stop revolving as soon as they leave the oven and are carried, while cooling, to the final inspection and packing stations.

The driQuik infra-red oven, manufactured by Dry Clime Lamp Corp., is only 17½ feet long, 7 feet high and 8 feet wide. It is divided into six temperature zones, each controlled by a cyclical timer which can be set accurately to within one degree of any temperature desired.

The flexibility of the oven is



demonstrated by the fact that pieces of all sizes and shapes are mixed on the Kroehler production line, and all of them are dried perfectly without continually changing the temperature controllers.

Evaporator Controls

SIX YEARS of successful operation has proved that proper chemical conditioning of evaporators along with proper control of make-up, output and blowdown eliminates excessive scaling of tube bundles.

The automatic evaporator control system used in our power plants includes a recording evaporator feed rate controller and a recording evaporator blowdown rate controller — both mounted on the turbine gauge board. Flow of steam to the evaporator is controlled by a Leveltrol unit and a differential pressure cell.

The operator sets the desired evaporator feed rate into the recorder controller at the turbine gauge board and the corresponding blowdown rate is then set into its recorder controller which is also on the turbine gauge board. The Leveltrol controls the opening of the extraction steam valve to the evaporator coils. As the water level rises more steam is admitted to the coils and as the water level lowers the steam is cut back. When the load is low and therefore the quantity of extraction steam is small the level in the evaporator will rise above the Leveltrol control point and then the differential pressure cell will cut back and eventually close the make-up valve.

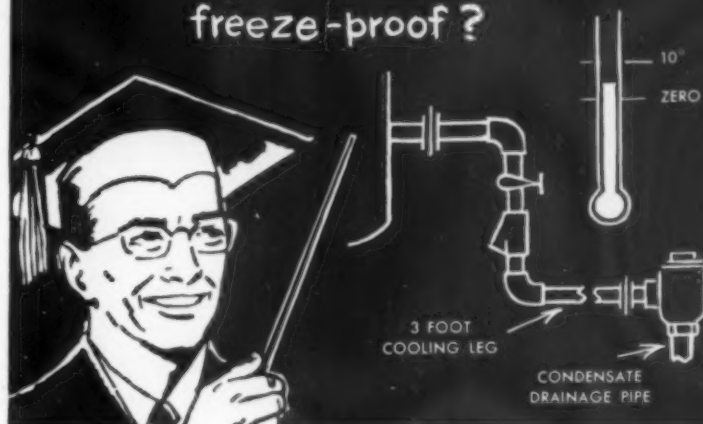
With this evaporator control system and the necessary chemical controls the evaporator tube bundles are never "cracked" or de-scaled in any manner and there is no noticeable reduction in capacity. Vapor quality averages better than the 1 ppm T.D.S. guarantee. The evaporator shell is flushed out with a hose each year at overhaul and put back into operation.

By A. R. COX, West
Texas Utilities Co.,
Abilene, Texas

STEAM TRAP CHALK TALK #11

PROBLEM:

What trap for outdoor installations is freeze-proof?



Anderson Quik-Flex Thermostatic Steam Trap— Guaranteed Freeze-proof for Two Years!

Guaranteed when properly installed and operated, this freeze-proof Anderson Quik-Flex Thermostatic Steam Trap is ideal for tracer lines, meter boxes, drips and other outdoor steam processing equipment used in chemical, refinery, solvent and other industrial plants.

Correct installation requires free condensate drainage on the discharge side. A cooling leg of at least three feet is a necessity to cool condensate, since thermostatic traps operate on temperature differential. The strainer should be installed in a down position to avoid freezes which could break the strainer body.

A TRAP FOR EVERY PURPOSE



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1961 West 96th Street • Cleveland 2, Ohio

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Company _____

Address _____

City _____ Zone _____ State _____

ANDERSON QUIK-FLEX

Atomic Developments

By JOHN F. LEE

SPI Consultant on Atomics
Broughton Professor and
Head of Mechanical Engineering Dept.
North Carolina State College

THE ATOMIC industry in the U. S. is estimated to have sold and delivered approximately \$1.5 billion worth of nuclear reactors, components, materials and services to government, industry and overseas markets during the five years period, 1954-1958. This estimate is projected from \$933 million worth of sales reported by nearly 200 companies participating in a survey conducted by the Atomic Industrial Forum, the association of the nuclear industry, and detailed in a new report entitled: *Business Statistics on the Atomic Industry, 1954-1958*.

The 36-page report also gives details on research and development expenditures, capital investment and employment, and includes 15 tables summarizing the statistical information. In issuing the report, the Forum noted that its reported or estimated sales totals do not include equipment and services for the nuclear weapons programs or propulsion reactors for the naval and aircraft programs, or most of the costs associated with the operation of government-owned research, development and production facilities.

Data on 1959 sales will be published later this year.

The Forum said its statistical program was designed to be useful in documenting the extent of non-government activities in atomic energy development and as a reference source for corporate and institutional programming, budget planning and market analyses. Copies of the report are available from the Forum at 3 East

54th Street, New York 22 at \$3.50 per copy.

In its introductory section, the AIF report adds the following summary data:

1954-1958 Sales

More than 75% of the market for the \$933 million sales reported for 1954-1958 was accounted for by the U. S. government contract and subcontract purchases. Approximately 20% of the total was for products and services delivered to U. S. industry and less than 4% went to foreign markets. The data also showed an 88% average annual increase in the dollar volume of sales and a 32% average annual increase in the number of companies and institutions reporting such sales during the 1954-58 period.

1958 Sales

Over \$650 million worth of nuclear products and services are estimated to have been delivered by American industry during 1958. This estimate is projected from a reported total of \$404 million worth of shipments and services by 196 of the companies and institutions participating in this survey.

Here again, neither the reported nor the estimated sales totals include equipment and services for the nuclear weapons program or nuclear propulsion reactors for the naval and aircraft programs.

More than 65% of the \$404 million reported total is attributable to shipment of components, equipment and materials for nuclear reactor systems. An additional 17%

was accounted for by the sale of services, a major portion of which were performed in connection with development of nuclear reactors.

Research and Development

Over \$224 million, approximately \$124 million in private monies and \$100 million in government monies, were spent in the 1954-58 period for nuclear research and development by 191 of the companies and institutions participating in this survey. This total compares with approximately \$1,144 million spent by the AEC during the same period in its reactor development and physical research program. Of this survey's \$224 million research and development total, approximately 45% was reported for design and development of reactors.

Capital Investment

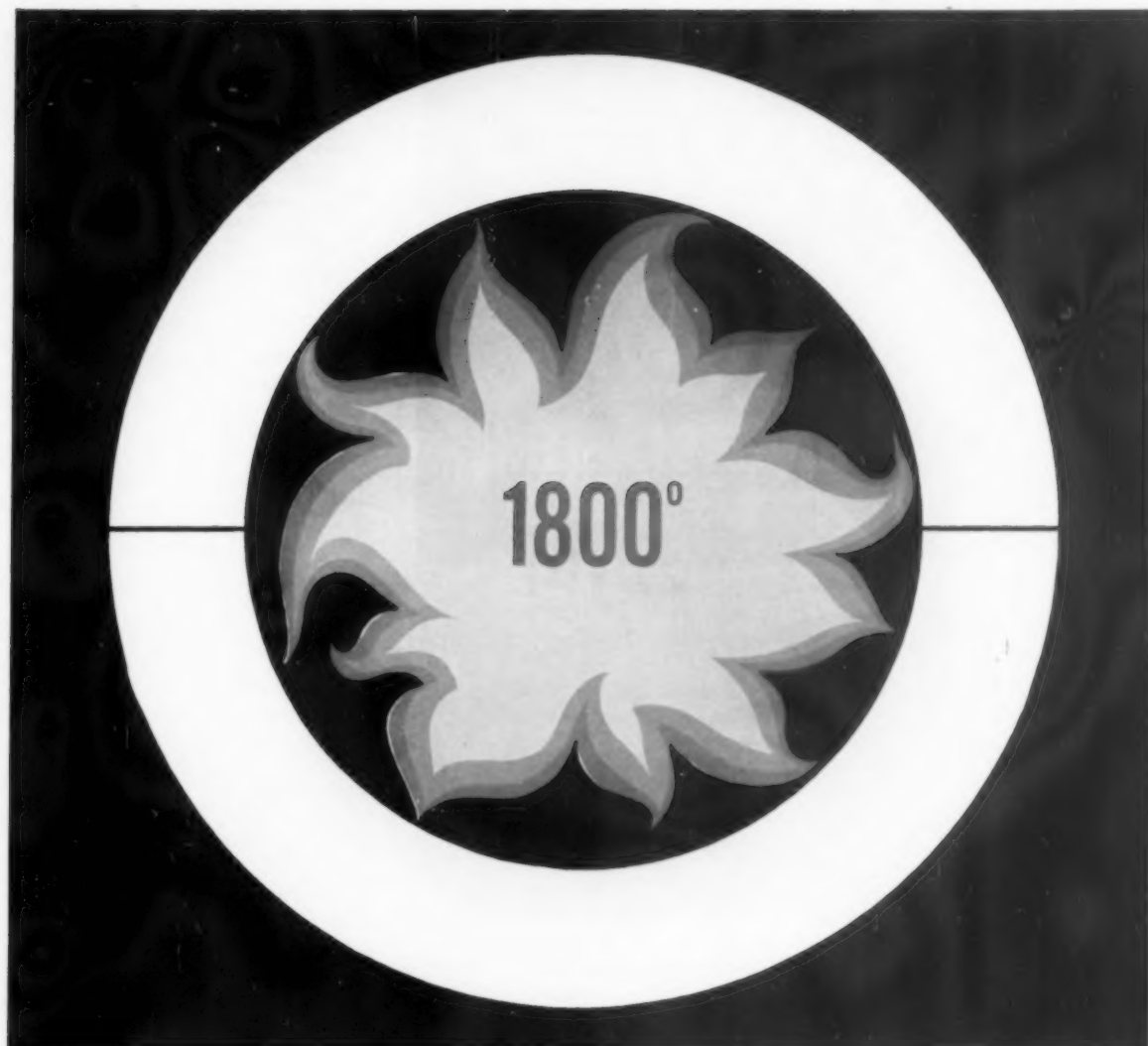
Approximately \$465 million in private funds are estimated to have been spent for capital investment in various types of nuclear facilities during the five year period, 1954-1958. This estimate is based on a total of \$308 million in capital investment expenditures reported by 109 of the companies and institutions participating in this survey. The largest single category of private capital investment, accounting for 31% of the reported total, was made on facilities for the milling and processing of uranium ores.

Employment

Some 203 of the companies and institutions participating in this survey reported, on a man-year equivalent basis, that more than 6,000 scientists and engineers and 13,000 non-technical personnel were engaged in nuclear activities. Since these numbers have been reported as man-year equivalents, the actual number of persons active in the field is without doubt larger than reported.

Depleted Uranium

A number of potential commercial applications for depleted uranium were indicated in two new studies reported by the Atomic Energy Commission. The two reports, prepared independently by Oak Ridge National Laboratory and Battelle Memorial Institute,



NOW CALSILITE-HI TO 1800°F

New Ruberoid Calsilite-Hi insulation for soaking heat to 1800°F. It's light, strong and so economical it can be used on all types of jobs. Calsilite-Hi is ideal for both insulation and fireproofing.

Calsilite-Hi, a molded calcium silicate insulation, extends the Ruberoid insulation line to the upper temperature limit of 1800°F. Available in half-sectional, three segmental and block form, it can be used as fireproofing for walls, partitions and ceilings as well as insulation for piping and equipment.

Calsilite-Hi is light and easy to install. It cuts and mitres quickly, smoothly and is gentle on hands. What's more, it keeps its strength even when wet, does not soften or fall off. Returns to its original thermal efficiency when dry. Resists most chemicals and alkalis in industrial concentrations.

For additional specifications or samples of Calsilite and Calsilite-Hi insulation, write: The Ruberoid Company, 500 Fifth Avenue, New York 36, New York.

THERMAL CONDUCTIVITY (BTU/sq. ft./inch/hr./°F.)

400°F. (Mean).....	0.54
600°F. (Mean).....	0.64
800°F. (Mean).....	0.74

Density 13.5 lbs. per cu. ft.

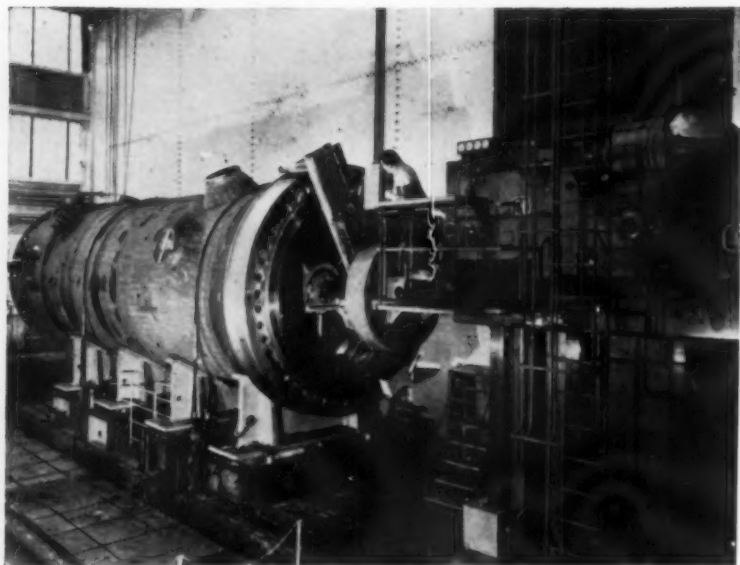
Compressive Strength
5% deformation (Min.) 135 lbs. psi.

Flexural Strength 75 lbs. per sq. in.

Change under Soaking Heat
24 hrs. @ 1800°F.

Loss in weight.....5%
Linear Shrinkage.....1.5%

The RUBEROID Co.



Shown on the horizontal boring, drilling, and milling machine at the Babcock & Wilcox Company is the mammoth 230-ton reactor vessel for the New York City area's first nuclear power plant at Indian Point, site of the Consolidated Edison Company of New York's nuclear electric generating power station. When the Con Edison nuclear station goes into operation in 1961, it will be capable of supplying the home electrical needs of a million people.

also show there are no outstanding uses at present for the material and considerable research and development apparently will be necessary.

Depleted uranium is uranium from which most of the fissionable U-235 isotope has been removed by the gaseous diffusion process. Most of that available for purchase is in the form of uranium hexafluoride, the compound processed in the gaseous diffusion plants. Thousands of tons are available.

The Battelle report, generally non-technical, said: "Most of the potential uses will require research and development and trial on an industrial level before significant markets can be developed. To do this will require a period of time and few new markets could logically be expected to develop within the next five years." Existing industrial uses include applications in ceramics; in high density work, as for counterweights; scattered chemical and electrical uses; and some modest use as a gamma radiation shield. Metallurgical uses appear to offer one of the best potentials for development of a sizable market.

As a continuation of this study program, Oak Ridge National Laboratory, has sponsored sub-contracts with two colleges, one in the South and one in the West. A contract with the Ceramic Engineering Department of Clemson College, South Carolina, calls for

further investigations into the uses of uranium compounds as refractories. The Chemical Engineering Department of Montana State College, under its contract with the Laboratory, is investigating uses of uranium compounds as catalysts. Both reports are being sold by the Office of Technical Services, Department of Commerce, Washington, D. C.

Indian Point Plant

A 230-ton nuclear reactor vessel was shipped from the Babcock & Wilcox Company's Baberton works bound for Buchanan, N. Y., where it will be erected as the key component in the New York City area's first atomic-electric generating station.

Towering 35 feet and measuring more than 12 feet across, the giant steel vessel was made for the Consolidated Edison Company of New York, which is building the 275,000 kilowatt atomic power plant on the Hudson River at Indian Point, 24 miles north of New York City.

Despite their size, the vessel, its head, and a number of parts which will be installed in the vessel's interior, have been made literally to a watchmaker's exacting specifications. The alignment of some of the internal parts of the vessel, for example, was held to a deviation from a straight line of not more than 7 one-thousandths of an inch over a length of 30 feet.

The vessel, its internals, and the reactor closure, or head, were subjected to approximately 9,500 quality control inspections and tests before shipment. The entire surface was ultrasonically inspected, and all welds of the vessel shell were x-rayed by a 2-million volt machine.

Formed from five shell courses of SA 212 Grade B carbon steel plate clad with type 304 stainless steel, the vessel walls are more than 7 inches thick. In addition to the five shell courses, the vessel assembly consists of a 23-ton flange forging nearly 2-feet thick and almost 2½ feet high, and a welded lower hemispherical closure weighing approximately 25 tons. The inner surfaces of these components have been clad with stainless steel.

The top closure for the vessel is more than 12 feet in diameter and 7 inches thick. It is welded to a flange forging nearly 2 feet thick and over 2 feet high. It will be bolted to the vessel flange by 50 studs, each 6 feet long, 5½ inches in diameter, and weighing 454 pounds. Stud threads are clad with silver. Stud nuts are 8 inches high and weigh 51 pounds each. One hundred spherical washers, weighing 10 pounds each also will be used to secure the head.

The reactor core is now being made at the Babcock & Wilcox's Nuclear Facilities Plant in Lynchburg, Va., for later delivery.

Atomic Space Ships

American spacemen, in atomic powered interplanetary ships, may be pushing to Mars and Venus by 1970-71, was predicted by a rocket expert at the Semi-Annual Meeting of ASME in Dallas. Krafft Ehricke, program director for Convair Astronautics, said that space

craft carrying eight men could make short "look-see" flights of about one to one and one-half years to survey the surface and atmosphere of Mars and Venus.

In one plan outlined by Mr. Ehricke, spacemen would take nearly 295 days getting to Venus, spend about 24 days in reconnaissance and 223 days returning. To Mars, they would travel for 138 days to reach the planet, stay for 34 days and return to earth in 175.

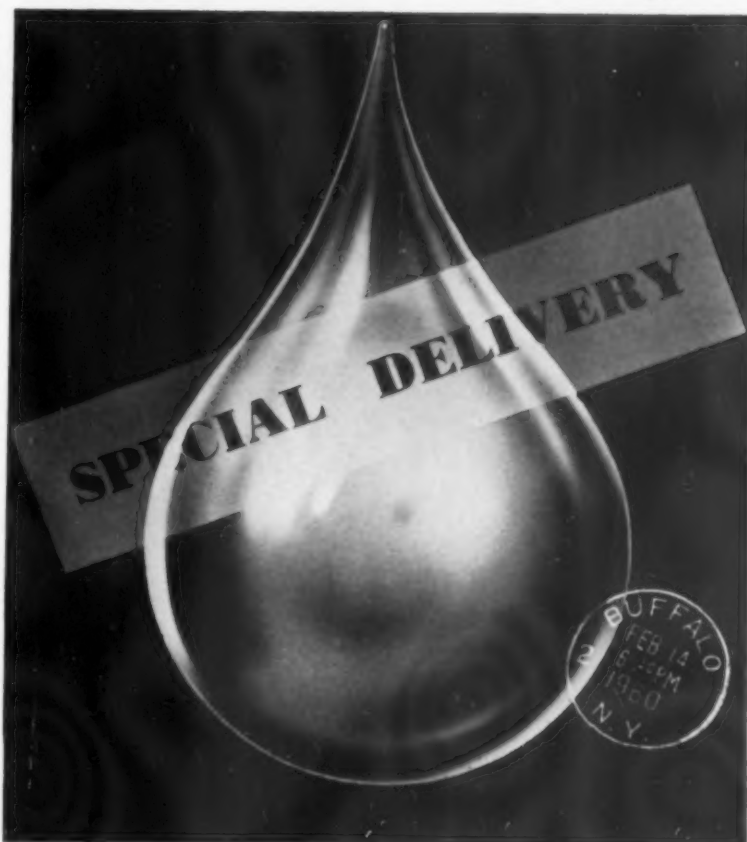
He set the target dates that would enable the U. S. to send manned missions to interplanetary space vehicle would range in gines will be developed by 1965 and manned lunar ships will use them from 1965 to '70. Long-term orbital flight testing of crews, their life support system and other vital components will have been conducted in satellite test facilities during 1960 to 1963 and nuclear energy will have become available in electric systems for many purposes.

According to Mr. Ehricke, the space: nuclear heat exchanger en- height from about 460 to 480 feet. At one end of a 100 foot stem are the "life support systems," where the crew lives. At the other, at a safe distance away will be the nuclear power plant and fuel pods.

Although on a short flight it would be possible to carry a solid food supply for each man (about three pounds per day) algae as food may be preferable for an interplanetary venture, since their protein, carbohydrate and fat content can be varied. The scientific payload of instruments, probes and other equipment should be about 57,000 pounds for Mars and about 320,000 for Venus.

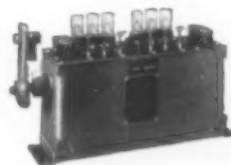
The power system to boost a spaceship out of the earth's pull and into a fast reconnaissance mission would have to provide a velocity of 60,000 to 90,000 feet per second, because the ship has to get through the Van Allen belt of radiation as quickly as possible. Since the booster engine would be too powerful for any other maneuvers, it will be jettisoned, along with the booster tanks. For orbiting the target planet and returning to earth, tanks containing hydrogen are arranged around a central stem from which they can be separated after they are emptied.

HOW FAST should you



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Whether you're operating high-compression diesels or fast-moving shear knives, you're probably paying more and more attention to lubrication *timing*. Whatever your field, our engineers will be glad to study your requirements and make specific recommendations. Your needs can be met either by adapting an existing model—or we will custom-build you your own lubricating system. Write for our catalog. Manzel, 257 Babcock Street, Buffalo 10, New York. You will get exact, on-time lubrication if you



ask the man from

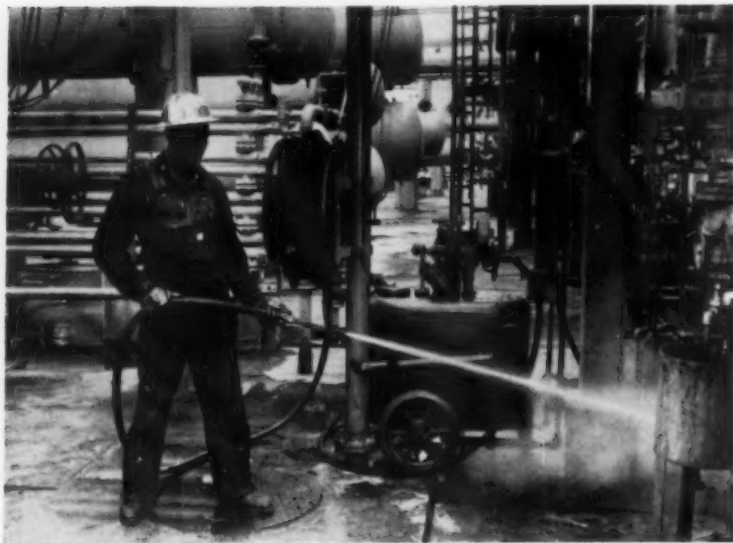


Manzel

SPECIALISTS IN LUBRICATORS AND METERING PUMPS

SINCE 1898

Housekeeping at Gulf Refinery



The Hydraulic cleaner has a 50-gallon storage tank for detergent and a 200-foot reel of neoprene hose to reach a wide area around it. Gulf has 14 such cleaners located throughout its Port Arthur Refinery.

BY USING hydraulic jet cleaner units, Gulf Oil Corporation has greatly reduced plant housekeeping at its Port Arthur Refinery. Workers can easily use high pressure, hot water mixed with detergent to do a thorough cleaning job of equipment — such as cement floors, pumps, and even condenser tube bundles.

The wheel-mounted units are located at stations with piped connections for water and inlet steam. Some 200 feet of $\frac{3}{4}$ -inch neoprene hose on a stationary reel permits cleaning within this radius around the jet cleaner.

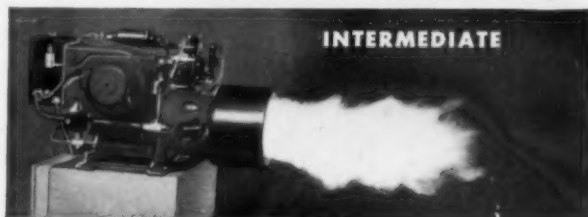
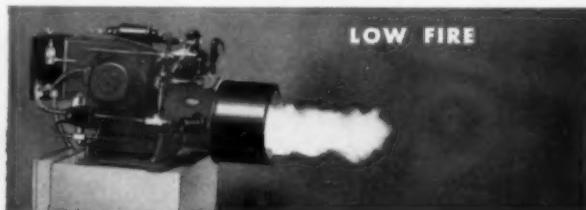
The Sellers hydraulic jets, used by Gulf, operate on ordinary plant steam and cold water. The venturi-injector design boosts discharge pressure to almost 2-1/3 times greater than the inlet steam pressure. This not only provides the necessary "wallop" for hydraulic scrubbing action, but also results in a high stream velocity (estimated at about 2 miles a minute) which produces a solid jet even at

Burner does a slow burn

for smooth, economical operation

HEV-E-OIL BURNERS start with a low fire, a small flame which gradually builds up to the required size for safe, smooth operation. Low fire and high fire are controlled exactly to assure top efficiency over the entire firing range. Moreover, Hev-E-Oil burners furnish all the primary and secondary air needed for efficient combustion. Available from 5 to 150 gph. Also combination gas/oil burners from 720,000 to 21,000,000 Btu.

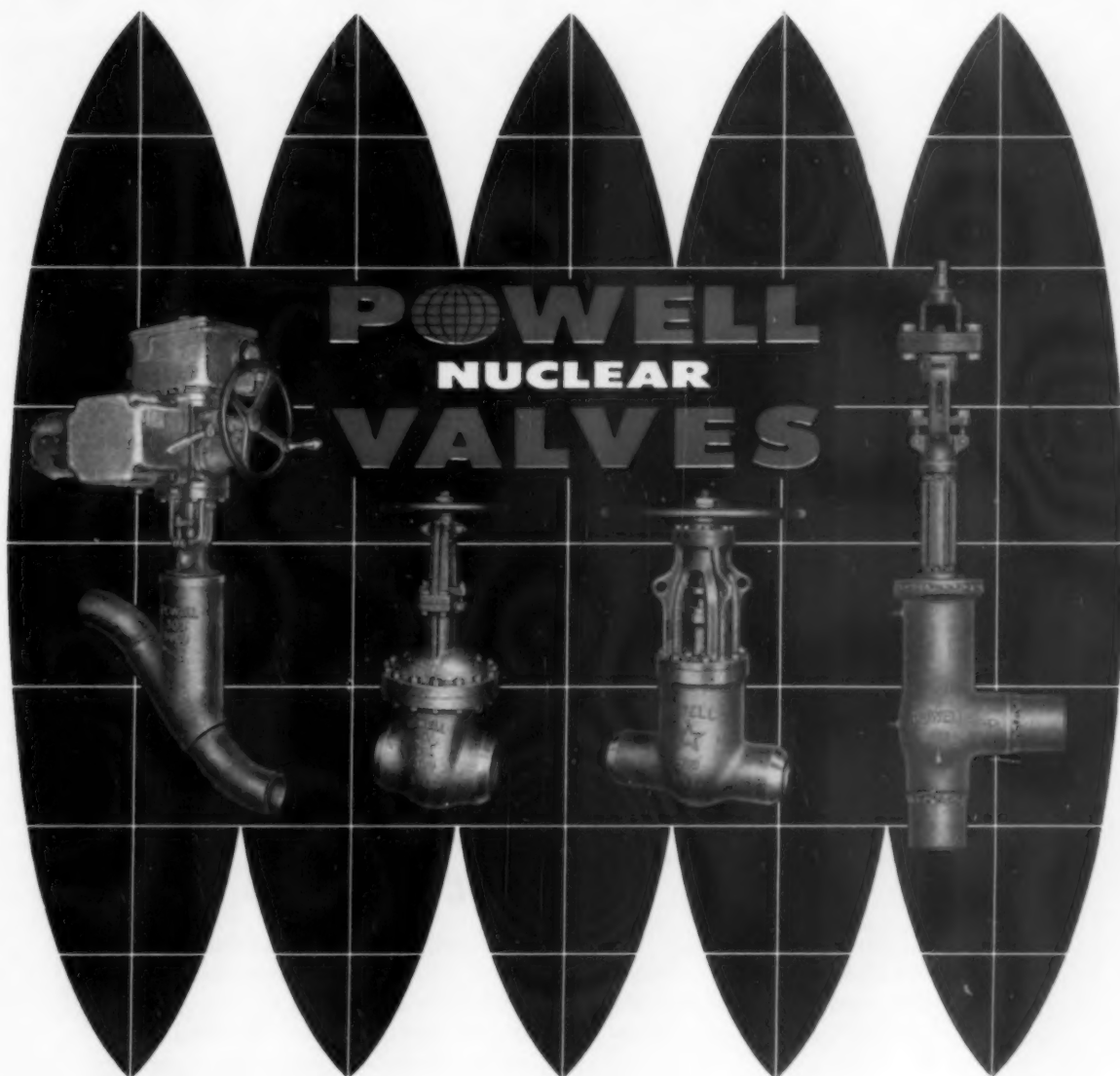
HEV-E-DUTY POWER GAS BURNERS also utilize slow fire build-up for top performance. Air is metered in correct proportion to the amount of gas being used, resulting in high efficiency regardless of chimney draft caused by outside weather conditions. Sizes from 720,000 to 21,000,000 Btu. For more information on Hev-E-Duty Power Gas, Hev-E-Oil and combination burners, write Dept. SPI-90.



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Performance makes the world of difference



*4-inch steel Bell-O-Seal "Y" valve for 300 pounds pressure.

Fig. 3003 W. E.—Steel bolted bonnet gate valve for 300 pounds W. P. Bolted bonnet valves can be supplied for pressures from 150 through 2500 pounds.

Fig. 19003—Steel pressure seal gate valve for 900 pounds pressure. Also available in 600, 1500, 2500 pounds W.P.

*3-inch steel, Bell-O-Seal Freeze Seal angle valve for 150 pounds pressure.

*These two valves are specifically designed and made to provide absolutely leak-tight control of liquid metals in the reactors of nuclear power plants.

Keeping pace with nuclear advancements — Powell manufactures valves to handle molten metals and other radioactive materials in atomic power plants—vital and hazardous materials which must be contained in and pass through the valves without the slightest leakage or failure.

Painstaking quality control is rigidly enforced in each step of manufacture of these important valves. Test facilities and inspection meet the most exacting specifications. For complete information on Powell nuclear valves, consult your nearest Powell valve distributor or contact Powell directly.

Powell . . . world's largest family of valves

THE WM. POWELL COMPANY • DEPENDABLE VALVES SINCE 1846 • CINCINNATI 22, OHIO



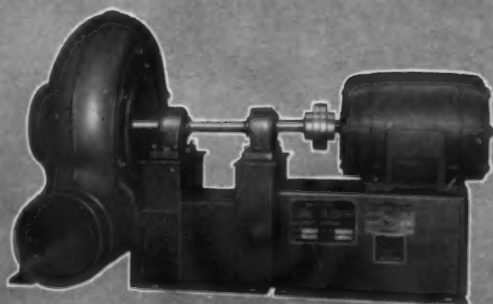
ARRANGEMENT 1



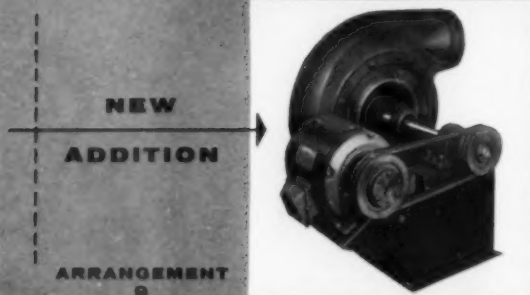
ARRANGEMENT 2



ARRANGEMENT 4



ARRANGEMENT 3



ARRANGEMENT 5

Presenting... *the new line of CLARAGE Type CI Exhausters*

Volumes to 3800 CFM, pressures to 18", temperatures to 750°F., six sizes, three wheel types, five arrangements as shown above, adjustable to any of the eight standard air discharge directions.

Result: fan equipment uniquely well suited to nearly every service imaginable. The uncomplicated, heavy construction, featuring cast iron housings and sideplates, makes the Type CI the natural selection for such severe applications as exhausting from grinding,

woodworking, and other machines . . . conveying materials ranging from fibers to grains . . . removing smoke and fumes . . . furnishing industrial process air . . . handling chemical and hot gases.

Write for new Catalog 707 containing performance tables, dimensions, and system data. Get acquainted with the advantages you'll enjoy by choosing Clarage Type CI Fans for your next requirements. CLARAGE FAN COMPANY, Kalamazoo, Michigan.

Dependable equipment for making air your servant

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Kalamazoo, Michigan

SALES ENGINEERING OFFICES IN ALL PRINCIPAL CITIES • IN CANADA: Canada Fans, Ltd., 4285 Richelieu St., Montreal



30 feet from the nozzle.

Effectiveness of cleaning is further increased by the higher temperature of the stream (about 140 F) and by the addition of detergent which is drawn from the 55-gallon storage drum in pre-set proportions through the syphoning action of the unit.

According to Gulf operating personnel, the hydraulic jet cleaner has also become an important maintenance tool. On heat exchanger bundles, for example, the jet cleaning stream ricochets through the tubes, cleaning even the inner tubes and coming out the other side, considerably dispersed, but still with force.

Band-Saw Improved by a Guard Device

THE LARGE BAND-SAW in this particular shop was subjected to continuous, heavy work imposed on it by the craftsmen cutting shapes and sizes for the fabrication of aluminum, bulk type, high-way tankers.

As is always the case where several individuals operate a given machine at separate intervals, all on piece and bonus plan status, the machine undergoes quite a beating in spite of the maintenance man's harried efforts to have it function correctly. The lack of agreement on blade tensions and rate of feed for the stock broke a lot of blades.

As a step toward control of the



Positive Solution for Scale Problems ... Ipco "On The Spot" Service

Ipco Laboratories emergency mobile unit is the safe, sure, speedy way to remove scale from your boilers, condensers, superheaters, economizers, heat exchangers, process equipment, domestic water lines, product lines, gas lines, cooling coils, water wells, and other equipment, without damage.

Downtime is at a minimum under most conditions, since Ipco Laboratories emergency mobile unit can operate while your plant is non-productive, and Ipco Service is only hours away.

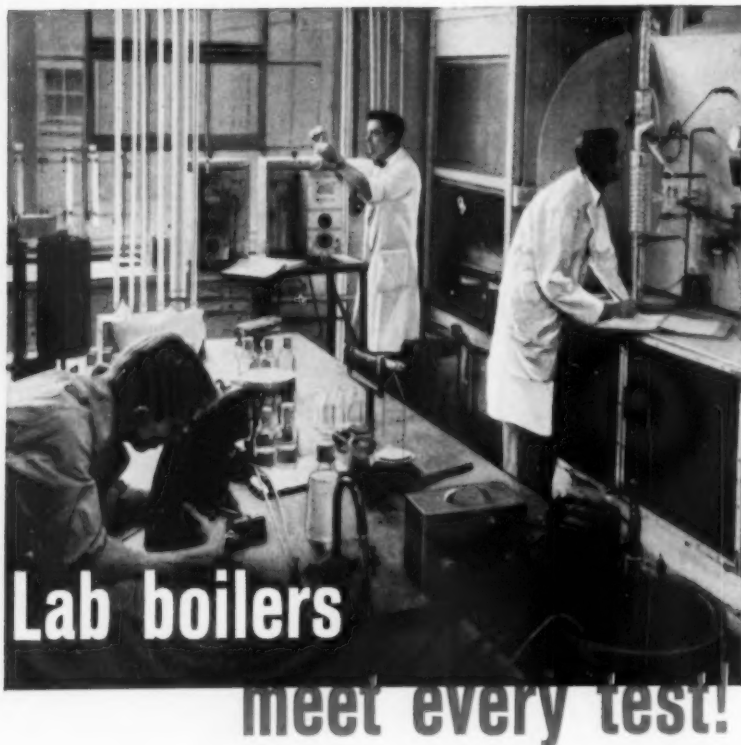
Avoid the danger of shutdowns, efficiency loss or insurance suspension because of scale. Call Ipco Laboratories emergency mobile unit for fast service. CE 3-4162 Atlanta, Ga.



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Two Cleaver-Brooks 150-hp boilers satisfy all demands for steam at Shell Chemical Corporation's Union, New Jersey Technical Service Laboratories

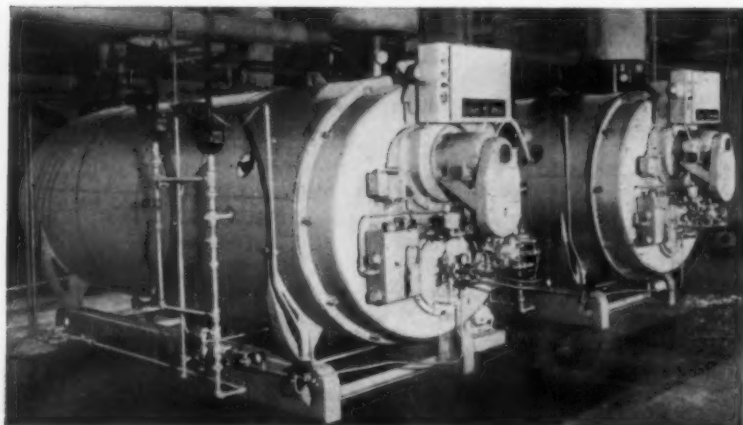
"We find Cleaver-Brooks boilers meet every test we have given them for top operating performance," reports George Baranchuk, utilities and service engineer at Shell's research building. Mr. Baranchuk goes on to say, "There is extreme versatility to our load as our requirements for heating and experimentation may run as low as 10 hp in the summer to over 140 hp in the winter. Checks we have made of CO₂ and stack temperatures indi-

cate we are getting excellent operating efficiency — even when we vary the load over widely separated peak and low demands. These boilers have definitely lived up to every claim you have made for them."

Put Cleaver-Brooks packaged boilers to the test! They are available in sizes from 15 to 600 hp . . . for oil, for gas or for oil/gas combination firing. Contact your representative or write Cleaver-Brooks Company, Dept. K, 305 E. Keefe Ave., Milwaukee 12, Wisconsin.

Cleaver  Brooks®
ORIGINATORS AND LARGEST PRODUCER
OF PACKAGED BOILERS

TESTING — Fully modulated Cleaver-Brooks boilers burning No. 6 oil supply steam for heating presses, constant temperature rooms, laboratory uses, laminating plastics and air conditioning system. Sold and serviced by Miller & Chitty Company, Union, N.J.



situation, the tension adjusting was ordered performed only by the foreman supervised set-up man, and as a further safeguard against flying blade ends of the band-saw, a sheetmetal guard was brazed in place over that section of blade nearest the saw operator. The use of the plastic face shield was made mandatory for operators, no matter how small a job was being worked in the machine at the time.

By **PAUL C. ZIEMKE**,
 Clinton, Tennessee

Some Maintenance Ideas

The following maintenance procedures have proved very effective in our large textile mill.

AIR CONDITIONING in our mill is provided by about twenty-five units in sizes from five to one hundred tons capacity. During the cooler months, we have found it most advisable to allow these units to run from thirty minutes to one hour each week. Prior to this practice, we had an excessive amount of trouble in the early summer months from loss of gas. By operating the units periodically, the seals are kept well lubricated and the gas does not escape so easily. We feel that the machines, overall, are also helped by this practice.

STANDARDIZATION of equipment can be very practical and economical if, of course, due consideration is given to choice with regard to cost, efficiency, life, and maintenance.

When I took my present job, we had a total of eleven different makes of steam traps. Most of them were good. No parts were kept for repairs. When a trap failed, it had been the practice to replace, unless minimum shop repair could be made. One of the eleven makes of traps was selected as being the one we would use. Eventually the other makes were discontinued. As of now we have

only one make of trap. We carry about thirty dollars value in parts and can repair any trap on the job. We also find that our maintenance men can effect repairs and installations much faster where only one make of trap is involved. I think standardization can also be applied to many other types of equipment.

BALANCING a rotating unit, such as a large fan, can frequently be accomplished by the well known old method of "chalking the heavy side and adding weights."

Bring the unit up to speed and shut off the power. While the fan (or unit) is slowing, a piece of chalk is held, just touching the shaft. The unit is then stopped, and where the shaft is marked, will designate the heavy side of the rotating unit. Weight can then be added to the unit exactly opposite the mark on the shaft. It may take several trials until the correct amount of weight is determined. Then the weight can be fastened permanently to the unit.

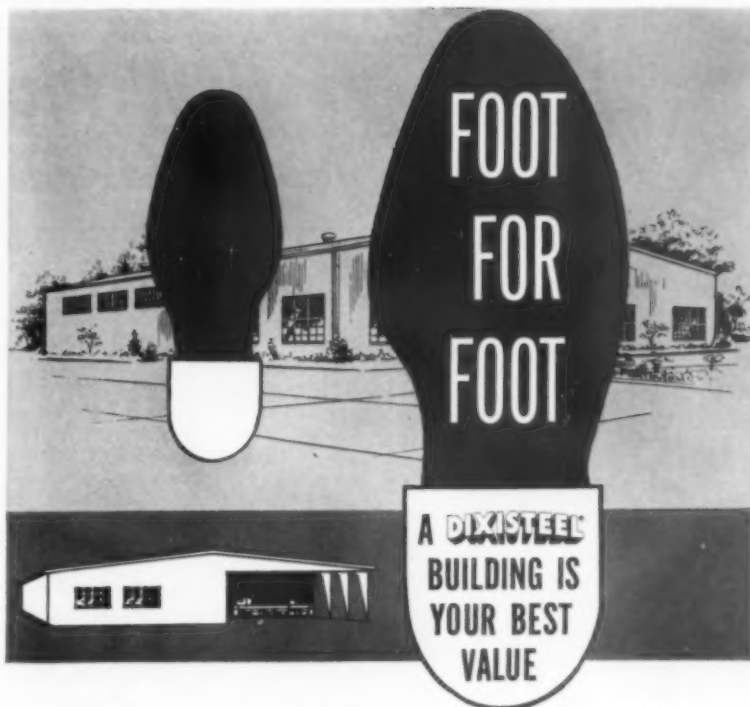
Recently I had excellent results balancing a double fan with a six inch diameter shaft, driven by a 40 hp motor with this method. The balancing time was about three hours for two men. To have removed the unit would have taken about forty hours each for eight men.

Georgia Power Breaks Ground for New Plant

Groundbreaking ceremonies at the site of the **Georgia Power Company's** \$76-million Plant McDonough heralded official beginning of work on what eventually will be one of the South's largest steam-electric plants.

John J. McDonough, power company president, for whom the 500,000 kilowatt plant will be named, turned the traditional first spadeful of earth. Plant McDonough, which was announced in a previous issue of S.P.I., will be built near Plant Atkinson on the Chattahoochee River 12 miles north of Atlanta.

The two 250,000-kilowatt generating units will be the most powerful ever to be used in a Georgia Power Company plant. The first generating unit will be completed in the spring of 1963 and the second in the spring of 1964.



Owning a beautiful, modern DIXISTEEL Building constructed to meet your own requirements is cheaper than renting space that barely gets you by!

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Any Size or Type

There are over 150 standard units in the DIXISTEEL line. Any height, width, depth, or type with 1 1/4/12 or 4/12 roof pitch. Just tell us what your needs are and let us come up with an idea and a price, both of which will make you happy.



ATLANTA, GA.—This combination office and warehouse has 30,000 sq. ft. with a 20 ft. eave height. Basic unit is Dixisteel Lo-Line LRF 10020 x 300.

**CHEAPER
THAN
RENT**



BILOXI, MISS.—This modern bottling plant and office has 24,000 sq. ft. with 20 ft. eave height. Basic unit is Dixisteel Lo-Line LRFC 10020 x 240.

**PAY ON
EASY
TERMS**



ST. PETERSBURG, FLA.—This fabricating shop and show room has 11,200 sq. ft. including 20 x 80 paint shop. The basic unit is a Dixisteel Lo-Line LRFC 8014 x 120.



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NEW Product Briefs

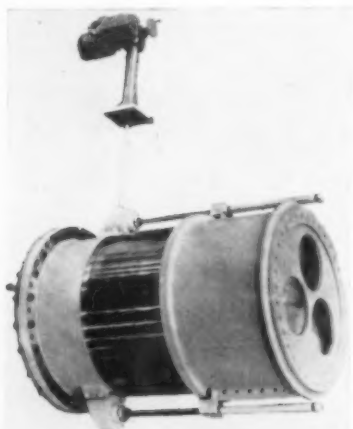
... there is always a **BETTER WAY**

Discharge Valve

U-1

Expansion of its free discharge valve line with the introduction of a new economical low head Howell-Bunger valve for use under 200-ft head has been announced by **Allis-Chalmers York Works**.

Available in sizes of from 12 inches to 108 inches by 6-inch increments, the new valve is of lighter construction than the heavy-duty Howell-Bunger valve designed for heads up to 400-ft.



The new low head fabricated steel plate valve has two operating gears on a shaft through the valve body instead of three arranged around the outside as on the heavy duty models.

The free discharge valve is a throttling arrangement which operates from full open to full closed to permit water to be discharged to atmosphere from behind a dam, usually from a position on the outer face at the base. It is finding application in water works, hydraulic plants, and for flood control.

Utility Pump

U-2

A new type, double diaphragm, utility pump is being introduced by the **Texsteam Corporation**, Houston, Texas. A portable unit, operated on air or gas pressure from 5 to 100

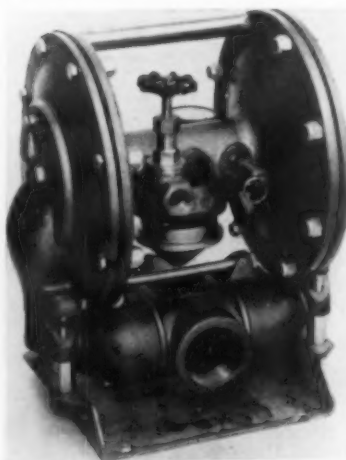
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See pages 85 & 86

psi, it provides closely controlled discharge volumes from 1 to 60 gallons per minute.

The double acting diaphragm design handles solvents, slurries, and even liquids containing solids to $\frac{1}{4}$ " in diameter with ease. Its simple design eliminates the packing, starting and sparking problems associated with conventional type utility pumps. In addition, it is practically unaffected by abrasives in the pumped liquids. Discharge pressures from vacuum to 60 psi are possible. It will pump from 14 feet of water, dry, on suction, to 29 feet of water when a foot valve is used.

An almost unlimited variety of uses has been found for this multi-purpose unit. It is used in sumps, bilges, mud pits, trenches, and tanks for pumping gasoline, mud, oil, water, etc.



The compact 70 pound pump comes complete with 2" suction and discharge — air pressure relief valve — carrying handle—steel base plate and air reduction control valve.

Heavy Duty Sweeper

U-3

A new heavy duty, rider-type power sweeper, designed and built for around-the-clock use, has been introduced by **Clarke Floor Machine Company**, 30 E. Clay Ave., Muskegon, Michigan.



The new Model CHD-36 sweeps a 36 in. swath and can be equipped with one side broom for 48 in. or with two for 58 in. swath. Its all-unitized welded body has $\frac{1}{4}$ " steel side plates and a $\frac{3}{16}$ " channel steel protective bumper encircling the entire machine. It has a 66" turning radius for easy operation in congested areas and plenty of power for sweeping inclined ramps as well as level surfaces.

Heavy Duty Jib Crane

U-4

A power-rotated jib crane with a load handling capacity up to 20 tons has been introduced by **R. G. LeTourneau, Inc.**, Longview, Texas. Development of the unit was made possible by a new high-strength alloy steel being produced by the company.

LeTourneau now has a range of jib cranes with capacities of from 3 to 20 tons. The heavy duty crane permits one-man handling of such items as heavy castings and forgings, ingots, machine tools, power units, steel slabs and other materials which ordinarily require expensive and time consuming diversion of overhead cranes from their



primary duties.

It is available with jib spans up to 25 feet and with vertical clearances up to 25 feet. Pillar mount type column is 27 inches by 27 inches.

All-weather design makes it ideal for outdoor installation, such as at rail sidings and concrete casting beds where heavy materials require year-around handling. Slip rings are internally mounted for full protection.

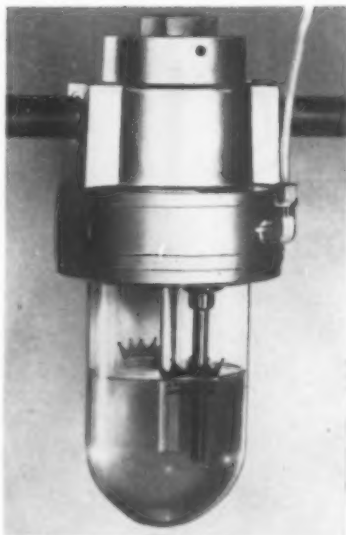
Although designed to operate as a

team with the 20-ton LeTourneau power trolley electric hoist, other hoists with standard trolley mounting can be used. Ample power for 360-degree rotation in either direction with full capacity loads, is provided by the high-torque a-c electric motor.

Pulse Lubricator

U-5 A new method of lubricating air operated devices has been announced by **Parker-Hannifin Corporation**. The new Crown Pulse Lubricator operates on pressure variations (pulses) and is entirely independent of air flow rates and duration of flow periods. Because the outlet end of the oil delivery line may be placed in any location, oil delivery to the exact spot desired is assured without the need for auxiliary pressurized oil supply.

Advantages of this new unit include positive lubrication of air operated equipment even when such equipment is located in high, overhead places and even when air flow through the lubricator is very low



and/or infrequent. It delivers a metered amount of oil and controls the amount of oil feed accurately from "very rich" (a drop every 3 or 4 pulses) to "very lean" (a drop every 100 or more pulses).

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Robvon's Commercial Backing Rings are designed for quick easy alignment of pipe or tubing and assure precise close tolerance fit-up. Robvon Backing Rings allow complete penetration and fusion of the weld. Robvon Backing Rings radiograph perfect certified welds. The patented nubs automatically set the welding gap for the root-pass. The internal bevel and flat inner land assures non-restricted fluid flow.

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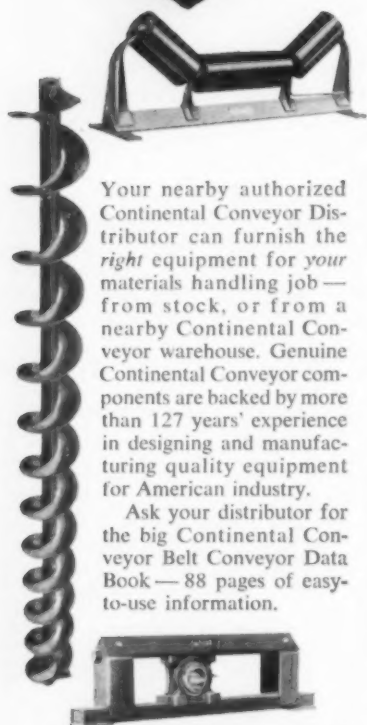
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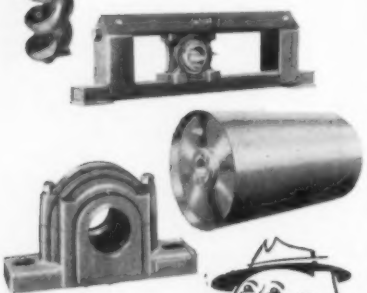


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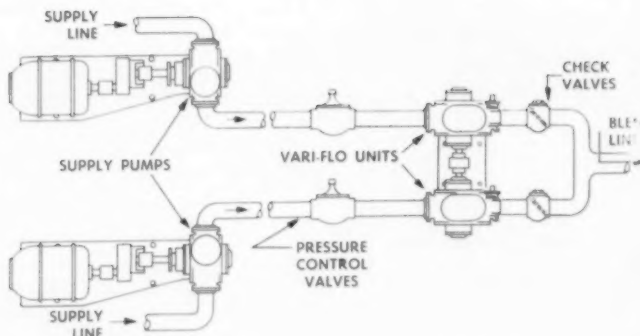


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Proportioning Pump

U-6 A new kind of pump recently introduced by the **Blackmer Pump Company**, 1809 Century Ave., Grand Rapids, Mich., is being used to build simplified, low-cost systems for proportioning liquids.

According to the manufacturer, these systems are being successfully applied to mix two or more liquids in accurate ratios, by means of the new Vari-Flo pump. Essentially, the unit is a vane-type positive displacement pump similar to Blackmer's standard design but with the addition of a unique flow-changing device that varies the pump capacity from

zero to full flow. The flow rate is changed instantly and accurately by means of a calibrated dial which can be operated manually or automatically either at the pump or from a remote station.

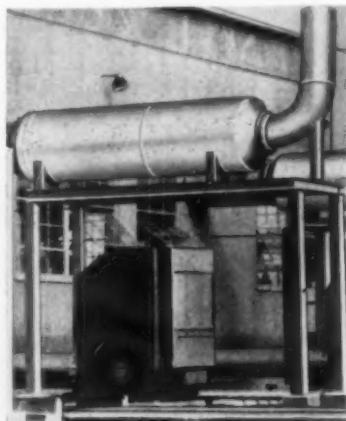
In proportioning, two or more of the Vari-Flo units (depending on the number of base stocks to be blended) are coupled directly together so that all must turn at the same speed. If the dial settings on each are different, then the flow from each will be proportionately different, even though the units are turning at identical speeds. If one of the units hesitates or stops, all will do the same, and the proper ratio will remain unchanged.

Chamber Type Silencers

U-7 A new line of silencers, recently introduced by the **Universal Silencer Corporation**, Libertyville, Illinois, covers the complete range of silencing performance . . . Type UR for maximum, Type US for average and Type UC for non-critical. With basic non-tuned, multiple chambered design the silencers control hazardous and objectionable noises which emanate from engine intake or ex-

hausts, blower intakes or discharges, vacuum pump discharges, compressor intakes, or vents for steam or air.

With heavy-duty, all-welded, explosion resistant construction, Unisilco units are designed for easy, convenient mounting in either vertical or horizontal planes. Sizes 1" through 3½" are supplied with standard threaded pipe nipples, while sizes 4" through 30" are equipped with flanges matching 125# diameter and drilling. Tailor-made units are also available.



Aluminum Roof Coating

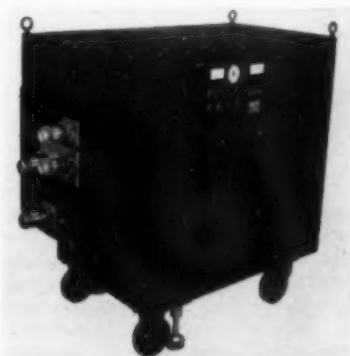
U-8 **Revere Chemical Corp.**, University Center Station, Cleveland 6, Ohio, announces that a new, high-quality Alcoa aluminum pigment is used in the manufacture of **REVCO Liquid Aluminum Coating**, reducing below-roof temperatures as much as 20 degrees.

This pigment is brighter, longer-lasting, and forms a shield that deflects the sun's rays. It not only reduces the work load of air conditioning equipment but adds years to the roof life. It is easy to apply with a long handled brush.

Circuit Breaker Testers

U-9

Mobile high-current compact test units for large-capacity, low-voltage power circuit breakers are a recent development of MULTI-AMP Division, MULTI-AMP Electronic Corporation, Union, N. J.



Designated Model CB-750, each unit is designed to test series trips on circuit breakers in the class of 75,000 amperes IC. In addition, the high-current output may be used for testing other electrical equipment.

This MULTI-AMP unit is rated 75 kva and is designed for operation on 480-volt, 60 cycle, single-phase service.

Condenser Cleaner

U-10

A completely new, lightweight condenser tube cleaner designed for use in small, lightly scaled tubes up to 1" diameter, is now available from The Airetool Manufacturing Company, 328 South Center Street, Springfield, Ohio.



This economy priced condenser cleaner, which weighs only 4½ pounds, has an air motor which operates on 90 psi at 2200 rpm, and the balanced design, coupled with a pistol grip handle, insures fast, easy one-man operation.

A built-in flushing system on the CC-425, controlled by a brass thumb valve, keeps the drill head cool and removes cuttings. A wide variety of cleaning heads is available for this tool.



RETURN LINE CORROSION *Can* BE LICKED!

Drastic reduction of return line corrosion in an easy, effective and economical way has been the unanimous experience of hundreds of plants throughout the country using Bird-Archer's Amine Treatment.

A plant in New York State, generating approximately 500,000 lb. of steam a day, had a normal condensate pH value of 6.3 that resulted in almost constant piping replacements. Only 6 lb. per day of Bird-Archer's Amine Treatment cut maintenance costs to a new low by raising the pH value to the safe range of 8.0 to 8.5.

A plant in New England, generating 600,000 lb. of steam a day, did not have an open feedwater heater which would mechanically eliminate the exceedingly high CO₂ content of their makeup water, consequently, the pH value of their condensate was sometimes as low as 5.9. Less than 12 lb. of Amine Treatment a day raises the pH value of the condensate to 8.5, eliminates excessive corrosion.

After two years of experience with Amine Treatment a power plant in Massachusetts, making 250,000 lb. of steam a day, enthusiastically reports that they eliminate over 75% of their piping replacements through the use of only 2 or 3 lb. a day of Amine Treatment.

Return line corrosion has been licked at these plants. Let a Bird-Archer Service Engineer help you solve your corrosion problems.

Write for Bulletin CP100 and the name of the Bird-Archer Service Engineer nearest you.

BA-804



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Adjustable
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Changes that Danger Zone
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SIMPLIFY PIPE LAYOUT

When you modernize to make money, go all the way. Cut piping costs to minimum with planned simplification. Give your staff a free hand to effect economies—at the same time, convert Danger Zones to Safety Zones. Equip every overhead valve wheel in your plant with Babbitt Adjustable Sprocket Rims with Chain Guides.

- They simplify pipe layout.
- They fit any size valve wheel.
- They are easy to install and operate.
- They operate any valve from the floor.
- They save time and money.
- The first cost is the only cost (no maintenance).
- They are packed completely assembled (one to a carton), with easy-to-follow instructions.
- A hot-galvanized rust proof chain is available for all sizes.

Babbitt Adjustable Sprocket Rims with Chain Guide are carried in stock by most mill supply houses. Just phone your mill supply salesman, or contact us direct.

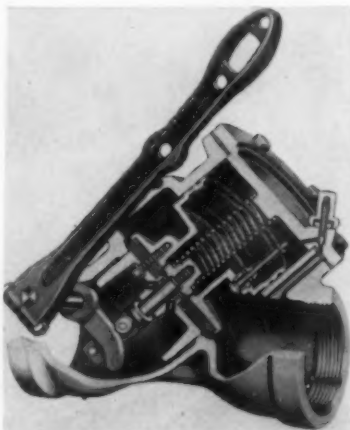
Babbitt
STEAM SPECIALTY CO.

3 BABBITT SQUARE, NEW BEDFORD, MASS., U.S.A.

Loading Valve

U-11

OPW-Jordan, 6013 Wiehe Road, Cincinnati 13, Ohio, has introduced a new loading valve to handle a wide range of liquids and chemicals. Discs of Neoprene, Compar, Silicone, Teflon and Viton-A are available for the first time, in addition to the standard Buna-N disc usually furnished. By replacing the Buna-N disc with one of the new discs, a standard loading



valve can be adapted to many other fluids. For example, while the Buna-N disc is suitable for fluids such as butane, hydrochloric acid, petroleum products or water, it is not recommended for others like acetone, benzene, nitric acid or sulphuric acid. For these liquids, one of the new discs (Teflon) is recommended. Loading valves are widely used in industry for bulk loading or unloading of liquids and chemicals. The valves are designed to prevent shock, ending costly line damage, yet hold after-flow to a minimum. They are available in 2", 2½", 3", and 4" sizes in aluminum or bronze.

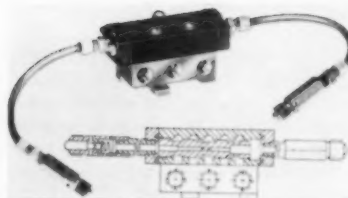
Bleeder Valve

U-12

A 4-way ¼", 5-ported pilot-operated air valve has been developed by Alkon Products Corporation, Hawthorne, New Jersey, for a wide variety of bleeder operations. Its mechanical simplicity makes it useful for sequencing, remote control and other automatic applications.

Since there is no fragile electrical circuitry in the valve, there are no hazards due to moisture or explosive atmospheres. It is capable of over 1,000 cycles per minute and has a life expectancy exceeding 50,000,000 cycles.

Small bleeder operators which



feature a hardened ball nose plunger can be mounted anywhere, thus saving piping and wiring costs. Operators can be mounted so they will be tripped by the moving parts of machinery. They can also be used as a 2-way normally closed valve in other circuitry requirements.

The valve's operating principle is simple: line pressure is admitted to both ends of the spool through the drilled out core. Since the areas at both ends are equal, the resultant thrusts are balanced. Bleeding the air from either chamber, by a soft, momentary touch, upsets the balance, causing the spool to shift toward the bled, or lower pressure end. The valve will operate at less than 5 psi line pressure. It is available as a double-bleeder for momentary operation or as a single-bleeder for maintained operation.

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See Pages 85 & 86

Draft Gage Manifold

A draft gage manifold valve for pressure boiler applications has been added to the fluid system specialty line of the Republic Manufacturing Com-

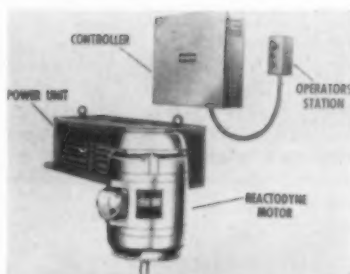


pany, 15655 Brookpark Road, Cleveland 35, Ohio. In cleaning fly ash and combustion residue from draft gage lines, disconnecting of lines is not necessary. The new unit, singly or in multiple, is permanently connected to the compressed air supply. The gage line is shut off during blowing off of the draft line, without affecting the gage. A removable plug permits zero check, and the calibration of instruments. Any number of units may be manifolded, with a separate unit for each pointer.

Variable Speed Control

U-14 A new controlled speed system for centrifugal pump and fan drives, which provides variable speeds from all-electric induction motors, has recently been developed by **U. S. Electrical Motors Inc.**, Box 2058, Terminal Annex, Los Angeles 54, California.

The system is designed for use on "cubic" loads (such as heat exchanger fans and sewage pumps) where torque requirements fall off rapidly at lower speeds. Use is not intended on constant torque loads. This all-electric variable speed drive is designed to operate from a stand-



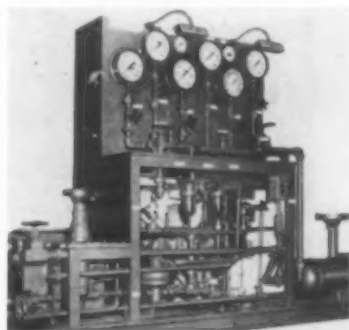
ard 220/440 volt, 60 cycle a-c power supply. Drive motors are available in a wide choice of horizontal or vertical types in the open design. Ratings are from 1 to 30 horsepower with a 2:1 speed variation, which is adequate for most pump and fan applications. When required, higher speed ratios can be obtained.

Valve Test Stand

U-15 A new unit manufactured to ASME requirements by **Farris Engineering Corporation**, 639 Commercial Ave., Palisades Park, New Jersey, will test all valves including globe, gate, plug cocks, safety and relief plus other hydraulic-pneumatic equipment.

Outside valve maintenance and re-

lated shipping cost, as well as valve inventory, can be reduced to a minimum by using the new test stand to reset valves for a variety of applications and pressures. The test stand's built-in compressor provides a useful source of compressed air for general plant service.



Easy to operate, the universal test stand requires no special skill or training. All controls are within reach on one panel with simple instructions printed on metal plate. It is compact (10½' x 3') yet its wide range permits testing of pressure settings up to 2000 psi for air and 6000 psi for water.



Finnigan Hot Water Generators are engineered to give you large quantities of hot water for low operating cost. The finest materials, creative skill and quality construction assure efficiency in Finnigan equipment. These generators are fabricated from corrosive-resistant materials and contain copper removable-coil heating elements. Before leaving the plant, each generator must conform to ASME, API, U. S. Government and other specifications. "Fabricated by Finnigan" is your assurance of quality.

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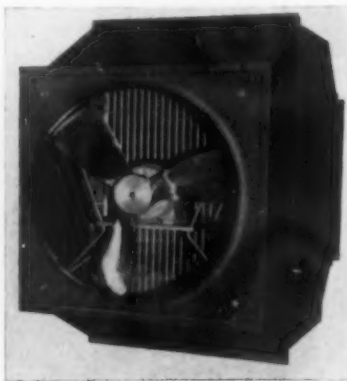


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Air Intake Units

U-16

A completely redesigned line of steam-fired air intake units for replacing air removed by operation of exhaust systems is now available from the **Hartzell Propeller Fan Company**, Piqua, Ohio.



Standard units consist of a single cabinet housing a propeller fan and a steam coil. Four standard units provide a capacity range from 4000 to 36,000 cfm (380,000 to 2,642,000 btu/hr at 5 lb steam pressure).

These units can be installed with or without filters and distribution ducts, according to the requirements of the specific installation. Shutters, filter house, filters, and outlet diffusers are available as accessory equipment at extra cost. If tempered air is not required, the heating coil can be omitted.

Belt-drive duct fans, and vane-axial and centrifugal blowers for external mounting can be supplied on special order for use in high static applications or where other considerations make it impractical to use an internally-mounted, direct-connected fan.

A separate accessory control package includes modulating thermostat and steam valve to provide constant discharge air temperature and a pressure-stat to shut down the fan and protect against coil freeze-up if steam pressures fall below a pre-set point.

Single Element Filter

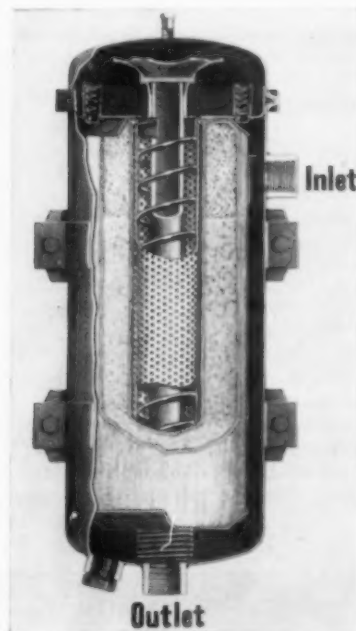
U-17

A large single element full-flow filter which will replace the company's multi-element filters has been announced by **Winslow Engineering and Manufacturing Company**, Oakland, Calif.

The new filter is based on Winslow's patented principle of having two flow rates in one element. It

requires only one inlet and one outlet.

The single element contains two filtering media — fine and superfine — encased in a double cotton cover, eliminating any danger of separation. It filters the full-flow oil stream at a flow rate of up to 25 gallons per minute of hot engine oil (S. A. E. 30) with a pressure loss of only approximately 4 psi.

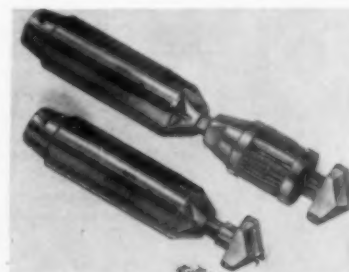


Based on the patented "Controlled Pressure" the new model has been released only after many months of field and laboratory testing. A simple inexpensive kit to convert present Winslow units to the new single-element is available.

Boiler Tube Cleaner

U-18

A new cleaner for boiler preheater tubes has been developed by **Elliott Company**, Roto Plant, 145 Sussex Ave., Newark, N. J. It consists of an air or water driven motor, a special sliding-pin expanding head, and a

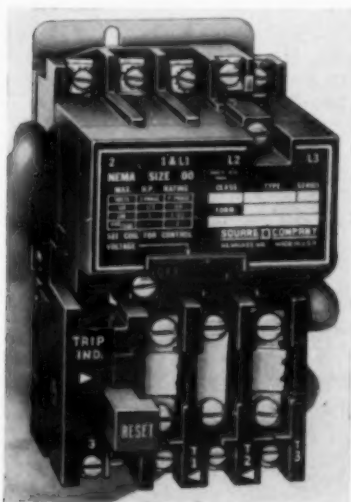


carbide drill point. For some applications the expanding head can be eliminated.

Because the motor of the new "Rotojet" is attached to a flexible hose, very little headroom is required, and the tool can be fed through the entire length of each tube without stopping.

Size 00 Starter

U-19 A compact new NEMA Size 00 starter for low-horsepower jobs has been developed by **Square D Company**, 4041 North Richards St., Milwaukee 12, Wisc. Rated from $\frac{1}{4}$ hp 110 volts to 2 hp 440/550 volts for 3-phase service, the new starter costs less than the Size 0 starters which previously were specified for these applications. Dimensions of the open device are only 3 13/16 x 5 3/13 x 3 45/64.



Featuring easy inspection and maintenance, the new starter has straight-through wiring, pressure wire terminals, molded coil and one-piece melting alloy overload relays for complete motor protection. It is available either open or in NEMA Type 1 enclosure with optional push-button or selector switch in the cover. It also is available without overload relays.

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USE SPI
READER SERVICE**

See pages 85 & 86

here's why SKILLED HANDS reach for **Snap-on® BOXOCKETS®**

1 DESIGNED FOR SAFETY

Box or ring-type design provides maximum safety. Opening cannot spread, twisting force is applied equally to all corners of the nut.

3 CONVENIENT

Deeply offset heads, set at angle to handle, give clearance to reach countersunk nuts and knuckle-saving space over obstructions. Take a new grip with only 30° swing.

5 FAST

Chamfered openings help guide wrench onto nut or bolt head quicker.

8 EXTRA LEVERAGE

Long handles give plenty of direct line leverage for breaking tight nuts loose or pulling them up.

9 WIDE RANGE

Sizes, 3/8" to 1-5/8" in this type. Other types 3/16" to 4-5/8".

2 SURE FIT

Snap-on double hex openings are machined to close tolerances to fit snugly without slipping.

4 TIGHT QUARTERS

Thin walls permit wrench head to reach into tight places.

6 MULTI-USE

Two sizes on each wrench.

7 COMFORTABLE

Rounded handle edges are easy on the hands.

10 TOP QUALITY

Snap-on Boxockets are hammer-forged from finest steel and heat-treated to exact standards for long life under tough use.

NEW SAFETY FILM

See the new Snap-on film, "Tool Safety." Write us and we'll have the nearest branch arrange a showing. Ask for new tool catalog.

SNAP-ON TOOLS
CORPORATION
8141-I 28th Avenue • Kenosha, Wisconsin



SARCO

PIPELINE STRAINERS

help prevent shutdowns

HANDLE ALL MEDIA

condensate, steam, water, oil,
and other piped fluids

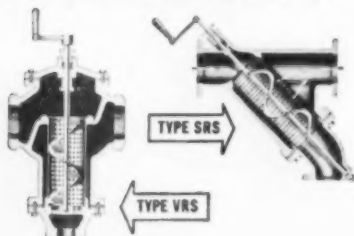
PROTECT ALL EQUIPMENT

temperature and pressure regulators, steam
traps, pumps, meters, burners, compressors,
hydraulics, lubricators, and nozzles.

AVAILABLE IN ALL TYPES AND SIZES

SCRAPER STRAINERS

hand operated and motorized



SELF-CLEANING Y-TYPE

NEW! TYPE CT CAST STEEL, SPECI-
FICATION A.S.T.M. — A-216 Gr. WCB



Tensile strength
70,000 lbs. per
square inch minimum,
for saturated steam or
liquids to 600 psi,
non-shock and 750° F.
total temperature.

Also Sarco Y-Type strainers in cast iron,
brass, and semi-steel, screwed and flanged,
all sizes and pressures.

For information on Sarco strainers, con-
tact your Sarco sales representative, district
office, or distributor; or write—

2166

SARCO

SARCO COMPANY, INC.
635 MADISON AVENUE, NEW YORK 22, N. Y.
PLANT, BETHLEHEM, PA.

Southern News Briefs (Continued from P. 22)

AIEE-ASME to Honor Alabama Engineer

A conference on problems of power generation and transmission, sponsored by The American Society of Mechanical Engineers and the American Institute of Electrical Engineers will be held in Philadelphia, September 21-23. Over 800 engineers and executives concerned with power generation for either utility companies or industrial plants are expected to attend.

Technical papers in such fields as coordinating generation and transmission of power, service requirements for industrial companies, advancement of power engineering, and automation of power plants, will be presented. Inspection trips to the Eddystone Power Plant of the Philadelphia Electric Company, the Switchgear Factory and Laboratory of the General Electric Company, and the Turbine and Heat Transfer Facilities of the Westinghouse Electric Corporation, are also planned.

During the meeting, the George Westinghouse Gold Medal for achievement in the power field will be awarded to **Ernest C. Gaston**, president, executive division of **Southern Services, Inc.**, Birmingham, Ala.

AIME Carolinas Section

The Carolinas Local Section, consisting of the States of North Carolina and South Carolina, heretofore in the Southeast Section has been established by the 36,000-member **American Institute of Mining, Metallurgical, and Petroleum Engineers**. The Institute now has 94 Local Sections.

Officers of the new Section are: Chairman, Earl C. Van Horn, of Murphy, North Carolina; Vice-Chairmen, William T. McDaniel, of Asheville, North Carolina, and S. Duncan Heron, of Durham, North Carolina; Secretary-Treasurer, Lewis J. Hash, of Enoree, South Carolina.



At the groundbreaking for **Masland Durable Leather Co.**'s new plant in Mocksville, North Carolina (announced in the July issue of SPI) are left to right: Charles E. McCoy, plant manager; Albert C. McCoy, company president; William F. Lotz, Jr., of William F. Lotz, Inc., who engineered the plant; and Ed Cotton, Masland's Southern agent.

Cooper-Bessemer — Texas

O. W. Stanley has been named branch manager of **The Cooper-Bessemer Corporation's** Odessa, Texas branch office, where he will direct field sales and service activities in the West Texas area.



Mr. Stanley has been, until his present appointment, a sales engineer in the company's Houston office. He is an engineering graduate of Texas A & M College.

Saline Water Conversion Plant — Freeport, Texas

The Office of Saline Water, U. S. Dept. of Interior, has recently awarded a contract to the **Chicago Bridge and Iron Company** for the first of five authorized saline water conversion plants. This plant, to be built in Freeport, Texas, will utilize the long-tube-vertical multiple effect distillation process, one of four different processes which have proven feasible by pilot plant operation during the past two years. The plant will employ a 12-effect evaporator unit and will use a new technique for avoiding scale formation by use of a suspension of fine solids in the brine. Thirty-three Goulds centrifugal pumps will be utilized for the many pumping requirements involved.

With the nation's consumption of fresh water increasing at a rapid pace, and resources limited, water shortages have already developed in arid areas and elsewhere in the country. The conversion of sea water or brackish water to water of a quality suitable for agricultural, industrial, municipal and other uses has progressed beyond the engineering stage. The problem now is to produce fresh water on a low cost scale. It is anticipated that the new Freeport plant will make available usable fresh water at the rate of 1,000,000 gallons per day at an expected cost of less than \$1 per 1,000

Largest Merchant Iron Producer in U. S. Chooses

WHIRLEX ID FANS

**High Erosion Resistant
Fan Wheel Assures
Longer Life ...
Minimum Maintenance**

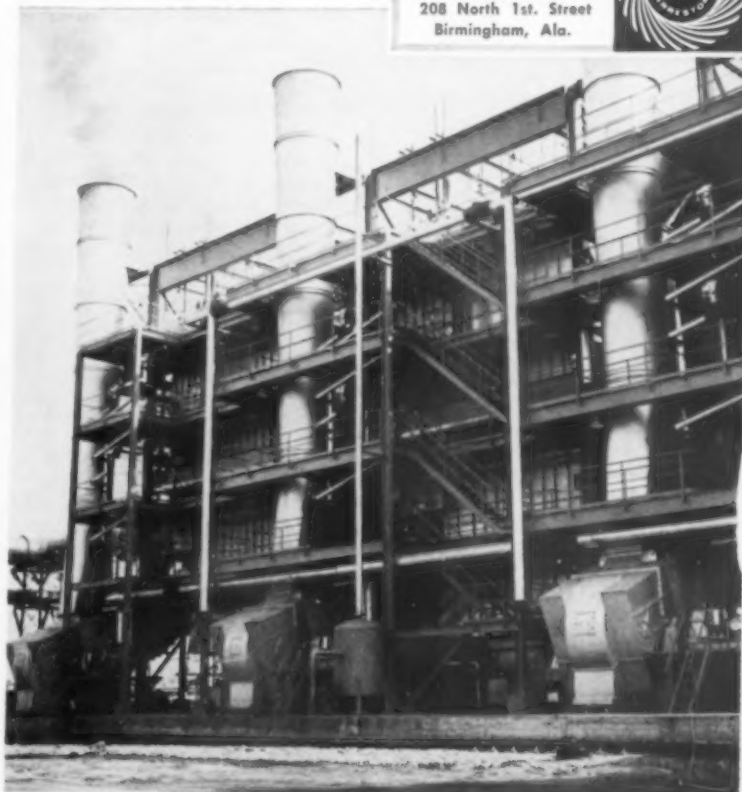
The largest furnace in the country producing merchant pig iron was recently placed in service as part of an expansion program by a major Southern mill. The new furnace has a rated capacity of 1000 tons per day and is one of the most modern in the country with respect to mechanization and automatic controls.

Because of their unique

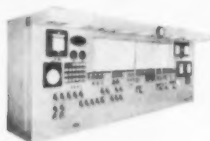
design and high erosive resistance, WHIRLEX heavy duty induced draft fans were chosen to handle the hot blast furnace gas. The three units shown here carry approximately 150,000 cubic feet of gas per minute. Preliminary fan examinations show wear to be less than a third that of ordinary fans designed for this purpose.

*A Whirlex fan installation
may solve your problem.
Write or wire us.*

**Fly Ash
Arrestor Corp.**
208 North 1st. Street
Birmingham, Ala.



METROPOLITAN EDISON uses...



This graphic control panel, designed and built by IWT, not only has all the controls but also a schematic diagram with indicating lights to show the action at all points.

Blowdown Unnecessary in a New High-Pressure Once-Through Boiler

The Portland Station of Metropolitan Edison Company at Portland, Pa., has a once-through type of boiler for which the purity of make-up water is particularly critical. IWT Mixed-Bed* De-Ionizers were selected to purify the make-up water to the required degree — and they succeeded, even beyond expectations. The total silica in the boiler water is consistently maintained at 0.1 ppm or less. From the Mixed-Bed* De-Ionizer, the silica is normally below 0.01 ppm and log sheets frequently show analyses as low as 0.003 and 0.005 ppm. With such a high purity of make-up water, blow-down is entirely unnecessary for extended periods of time. All IWT equipment — including chemical feeders, gravity filters, cation and anion exchangers, a vacuum degasifier, and the Mixed-Bed* De-Ionizers — are controlled automatically from the graphic panel shown above.

* U.S. Pat. Nos. 2,605,084, 2,771,424

PIONEERING EXPERIENCE

Such outstanding performance is the result of intensive early and continuing experience, by Illinois Water Treatment Co., with the special problems of ion-Xchange. To benefit from this leadership, call your IWT representative.

ILLINOIS WATER TREATMENT CO.
840 CEDAR ST., ROCKFORD, ILLINOIS
NEW YORK OFFICE: 141 E. 44th St., New York 17, N.Y.
CANADIAN DIST.: Pumps & Softeners, Ltd., London, Ont.

gallons. When the same process is incorporated in plants designed to produce 15-20 million gallons per day, further economies of operation are anticipated which will lower the cost appreciably.

St. Joe Paper Buys Md. & Va. Plants

Acquisition of the facilities of Columbia Container Corporation of Baltimore, Md., and an affiliate company, the Columbia Container Corporation of Virginia, by the **St. Joe Paper Company** of Jacksonville, Fla., has been announced. Other Southern operations of the company are in Birmingham, Ala.; Houston, Tex.; and Memphis, Tenn.

The Baltimore plant is located at 2200 Annapolis Avenue and the Virginia facility is in Portsmouth. Approximately 200 persons are employed at both plants.

In addition to its 11 container plants, the company operates one of the largest containerboard mills in the nation at Port St. Joe, Fla. The St. Joe Paper Company also owns

more than 1,000,000 acres of woodlands which supply the mill with the pulpwood used to produce containerboard, from which corrugated shipping containers are made.

No changes in personnel at the Baltimore and Portsmouth plants are contemplated.

Acme Industries Builds Branch Plant — Alabama

Ground has been broken on a 50-acre site at Greenville, Ala., for a new branch plant for **Acme Industries, Inc.**, manufacturer of air conditioning and refrigeration systems.

The new plant will contain 100,000 square feet of manufacturing space, with future plans calling for a building of approximately 250,000 square feet. Completion is scheduled for early October.

Acme Industries' two plants in Jackson, Mich., will continue production, but these additional facilities in the South are being provided to take care of the ever-expanding air conditioning market.

Reynolds Aluminum Cable for Arkansas

The largest reels of aluminum cable ever shipped from the **Reynolds Metals Company** Alloys Plant at Sheffield, Ala., are shown being loaded aboard special railroad cars. Each reel weighs eight tons, is 96-inches in diameter and contains almost two miles of 1½-inch diameter aluminum cable for use in the high voltage transmission lines of the Arkansas Power & Light Company.

Alloys Plant Manager D. H. Hipp said aluminum transmission cable produced in the big plant was becoming increasingly popular because aluminum's higher conductivity per pound permitted the use of longer spans with a consequent saving in poles or towers.





Cooper-Bessemer — D.C.

The appointment of William F. Heavey as Sales Engineer for The Cooper-Bessemer Corporation's Washington office has been announced. In his new position, Mr. Heavey will work under the supervision of F. W. Quiggin, manager of the Washington branch.

A graduate of the United States Naval Academy, Mr. Heavey is a member of the A.S.M.E. and the American Welding Society.

Yale & Towne — Ga.

Henry H. Ogden, formerly Executive Vice-President of the Mead Atlanta Paper Company, has been named President of R. S. Kerr & Co., Inc., Atlanta, Georgia, representatives of Yale Materials Handling Division, The Yale & Towne Manufacturing Company.

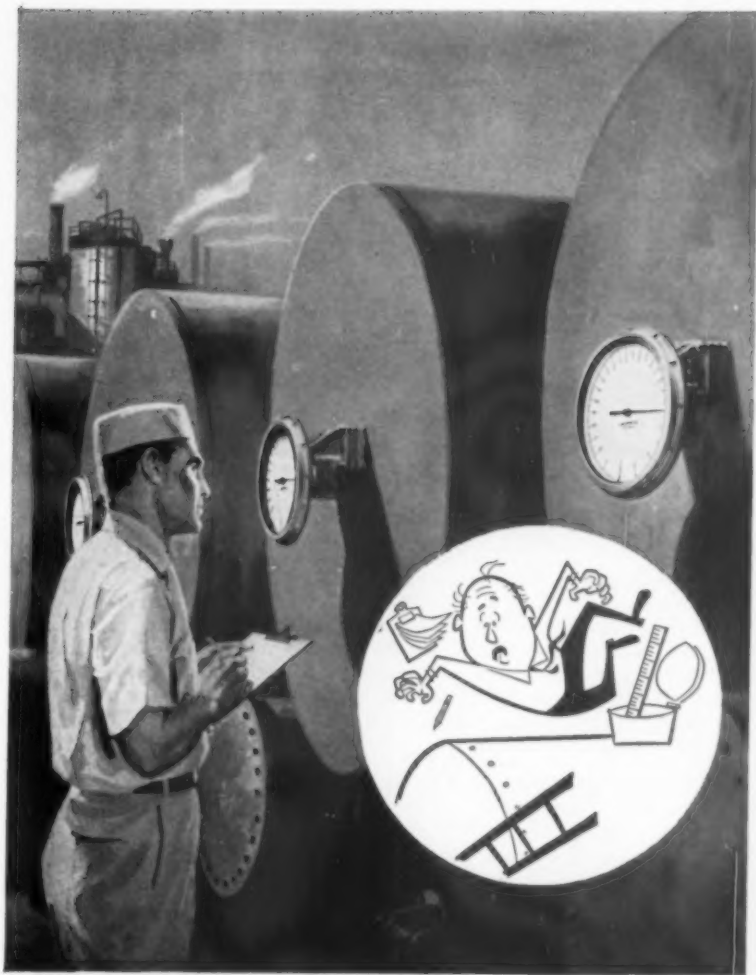
Mr. Ogden has announced that a broad expansion program is already in operation. The company's facilities for maintenance and repair will be continued and strengthened.

Associated with Mr. Ogden are William H. Miles, Sales Manager; R. S. Kerr, who has been in materials handling and selling for well over thirty years; C. R. Blackwood, and Baxter Kerr.

The company will continue to serve the same territory as formerly, the entire State of Georgia except for Savannah.

Pennsylvania Crusher Division — Louisiana

Pennsylvania Crusher Division of Bath Iron Works Corporation, West Chester, Pa., announces that Fletcher Equipment & Supplies, Inc., with main office at 743 Camp Street, New Orleans, and a branch at 1738 Scenic Highway, Baton Rouge, has been appointed sales representative for the State of Louisiana.



Reading liquid levels got you out on a limb?

Not if an easy-to-read Liquidometer Gauge is used to indicate exact levels at a glance. It's as simple as telling time...ends potentially dangerous dip-sticking.

Liquidometer Gauges enable one man to read liquid levels safely and precisely—keeping a continuous, right-at-hand inventory—without risking life and limb.

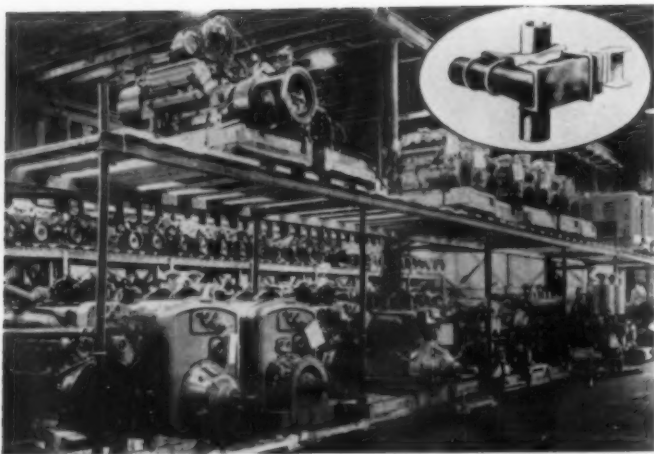
Take the hazards out of liquid measurement—save time, too—by installing reliable Liquidometer Gauges. There is a type available for practically every liquid measuring application.

For complete details, write



THE LIQUIDOMETER CORP.

Dept. F., LONG ISLAND CITY 1, NEW YORK



Beam-Strut Clamps for Houston Plant

Beam-Strut universal clamps permit use of inexpensive material for construction of heavy-duty racks. Here the clamps, manufactured by **Tube-Strut Corp.** of Los Angeles, Calif., are used at **Stewart & Stevenson Services, Inc.**, Houston, Texas. With ordinary 2 in. pipe and 4 in. I-beam, construction of storage facilities for extremely heavy compressor engines is possible. The clamps are capable of handling up to 20,000 lb capacity. Substantial savings were effected by their use in the Houston installation.

Replacement Tubes

any size..
any boiler!

No need for shut-downs—
Order the tube replacements
you need from B. T. A.

BADENHAUSEN ★ CASEY HEDGES ★
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 RUST ★ SPRING ★ STIRLING ★
 E ★ UNION ★ VOGT ★
 KEELER ★ RUST ★
 BADEN ★ ASEE HEDGES ★
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BOILER TUBE

COMPANY OF AMERICA

McKEES ROCKS, PA. (Pittsburgh District) Federal 1-7750

MHI Show — Louisville

Charles C. Bassett, plant engineer for the Belknap Hardware & Manufacturing Co., Louisville, Ky., has been named co-chairman for the Technical Conferences that will be held in conjunction with **The Material Handling Institute Central States Show**. E. G. Klintiver is regional chairman for these conferences, which will be sponsored by Region IV of the American Material Handling Society, Inc. The appointment of a co-chairman was necessitated because of the sudden illness of Paul A. Fisher, general chairman of the conferences. His duties will now be shared by Mr. Bassett and Mr. Klintiver.

L. West Shea is managing director of The Material Handling Institute, Inc., which will produce the trade show. Over one hundred manufacturers have reserved exhibit space.

The daily technical conferences will interpret new and improved methods of industrial material handling and protective packaging, with "Progress Through Knowledge" as the central theme.

Both events will be held in the Kentucky Fair and Exposition Center at Louisville, Nov. 1-3, 1960.

TCI Tin Mill — Ala.

Blaw-Knox Company has been awarded a contract for a new six-stand 52-inch cold reduction mill to be installed at **U. S. Steel's Tennessee Coal & Iron Division** tin mill at Fairfield, Alabama.

When completed in the early part of 1962, the installation will be U. S. Steel's first six-stand cold reduction mill for tin plate. It will be capable of cold reducing steel for tin plate at speeds in excess of a mile and a quarter per minute, which is approximately three times the speed of existing facilities which it replaces. The new mill is needed to meet an increasing demand for "thinner and wider" tin plate.

Allis-Chalmers — N. C.

Kincaid Engineering Company, Inc., 823 E. Franklin Ave., Gastonia, N. C., has been named a distributor for **Allis-Chalmers** water conditioning products.

L. M. Kincaid, Jr. is president of the company, and B. A. Buys, Greensboro, N. C., sales manager.

Territory to be served includes all the counties in Allis-Chalmers Charlotte, N. C., district.

Professional Engineers Elect Southerners

Noah E. Hull, vice-president and general manager of the Hughes Gun Company and assistant to the vice-president, manufacturing, of the Hughes Tool Company, has been elected president of the **National Society of Professional Engineers**.



Mr. Hull, of Houston, Texas has served as National Society vice-president for the Southwestern Region. Mr. Hull has long been active in the San Jacinto Chapter of the Texas Society of Professional Engineers, and he is a former chairman (1955-58) of the Professional Engineers Conference Board for Industry.

Among the new vice-presidents elected are: R. King Rouse, Greenville, S. C., Southeastern Region; and Thomas T. Mann, Roswell, New Mexico, Southwestern Region. Russell B. Allen, Silver Spring, Maryland, was elected treasurer.

N. C. Engineer Wins Clark Essay Contest

T. B. Keene, Jr., materials handling engineer at Douglas Aircraft Company, Charlotte, N. C., has won first prize of \$2,000 in **Clark Equipment Company's** 1960 materials handling essay contest.

Mr. Keene's paper dealt with design and use of modular cells or racks for storage and handling of parts during manufacturing, to eliminate repetitive transfer of parts from one type of container to another. The essay describes how racks can be assembled to fit individual parts, and can be modified easily if part dimensions change.

The paper was one of ten awarded cash prizes in the \$5,000 contest, which is sponsored by Clark's Industrial Truck Division and conducted by the American Materials Handling Society to promote interest in modern handling techniques. This

year's theme was "Mechanize to Modernize."

Clark is a leading producer of fork lift trucks, straddle carriers, powered hand trucks and towing tractors.

Parker-Hannifin — S. C.

Livingston and Haven Inc., 2115 Meeting Street Road, Charleston, South Carolina, is now franchised as a distributor for Crown air sys-

tem regulators, filters and lubricators, according to an announcement by **Parker-Hannifin Corporation**.

Malcolm D. Haven, president, reports that his firm is carrying a substantial Crown stock to assure speedy handling of customer needs. Cooperating with the firm is H. J. McBride, Parker-Hannifin district manager of distributor sales in the Carolinas. Livingston and Haven operates a branch at Charlotte, North Carolina.

(Continued on page 91)

LINCOLN

MASS PRODUCTION CLEANING BY THE MAINTENANCE TWINS



Model 772 Lincoln Scrubmobile. Scrubs, rinses and dries a 6' path automatically. One man can scrub clean over 100,000 sq. ft. per hour.



Wilshire 1400 Power Sweeper. On a tank of gas you can sweep all day. Vacuum sweeps 36" path. Other sweeping widths up to 6'.

is management featherbedding floor maintenance costs?

If you hire a man and give him a broom, all he can do is push a broom. But, equipped with a Lincoln automatic floor scrubber or a Wilshire power sweeper he can clean your plant clean, really clean, *faster and for less money!* Why not let the maintenance crew of your plant *add* to the net profit of the business? Write today to learn how the Maintenance Twins are saving time, labor and money in plants where management decided to *cut floor maintenance costs!*

Go Lincoln-Wilshire automatic. Complete line of equipment for scrubbing, sweeping and polishing floors. A faster, more thorough job for less money.



TOLEDO 3, OHIO

WILSHIRE

LINCOLN FLOOR MACHINERY CO. AND WILSHIRE POWER SWEEPER CO.
divisions of American-Lincoln Corporation...in business since 1903



NEW Catalogs & Bulletins

... there is always a **BETTER WAY**

MAINTENANCE—TOOLS EQUIPMENT & METHODS

1—Emergency Chemical Cleaning — 4 page catalog highlights Anco solvents and service trucks available to remove scale, rust and other deposits from all types of heat exchange equipment. — **ANDERSON CHEMICAL COMPANY.**

3—Metallizing — Use industry's low-cost "putting-on" tool. Now within reach of the smallest shop. Bulletin tells how you can spray carbon steels, stainless, babbitts, brass, nickel, aluminum. — **METALLIZING ENGINEERING CO., INC.**

6—Tool Truck — Save time with this compact truck carrying full tool selection to emergency repair jobs. Four drawer unit described in literature 8141-A. Semi-pneumatic 10" balloon tires ease heavy loads over rough pavements. — **SNAP-ON TOOLS CORPORATION.**

10—Floor Maintenance — Literature describes how the complete line of Lincoln-Wilshire automatic equipment for scrubbing, sweeping and polishing floors will cut plant maintenance costs. — **AMERICAN-LINCOLN CORPORATION.**

27—Corrosion Control Systems — Five-step procedure outlined in Brochure 9111 for primary protection and preventive maintenance of all metal surfaces subject to acids, alkalis, solvents, fumes and gases. — **TRUSCON LABORATORIES.**

39—Roof Maintenance — Case History R-25 details a planned preventive maintenance program and its economies for a 2,100,500 sq ft industrial roof — objectives, program, results and budgeting for long-range protection. — **THE TREMCO MANUFACTURING COMPANY.**

75—Storage Racks — How you can build them faster with Kee Klamp slip-on fittings described in Catalog K-25-D. Allen wrench only tool needed. Simple to erect; easy to dismantle. 58 varieties for pipe sizes $\frac{1}{2}$ " to 2". — **KEE KLAMPS.**

84—Zinc Coatings — Bulletin No. 4 describes Galvanox-Type II (Epoxy) a zinc-rich coating to be used as repair item for damaged areas on galvanized sheets and structures. Provides both cathodic type and barrier protection. — **SUBOX, INC.**

FANS—PUMPS—COMPRESSORS HEATERS—HEAT EXCHANGERS

107—Proportioning Pumps — 4 page brochure illustrates and describes company's proportioning pumps and package chemical feeding units. Includes applications and specifications. — **THE BIRD-ARCHER CO.**

110—Deaerator — Bulletin 4651 describes design that eliminates tubular vent condensers without impairing efficient purging of noncondensable gases. Unit handles wide range of operating conditions. — **COCHRANE CORPORATION.**

128—How to Solve Pumping Problems — 36-page booklet gives general explanation of rotary gear pumps and factors involved in pumping problems; three sample problems; technical data — graphs and tables. — **ROPER HYDRAULICS, INC.**

135—Heat Exchanger — Bulletin 132 shows how sectional Aero unit gives close temperature control, saves labor, power, and water; design improves heat transfer to outdoor air by evaporation; 7,000,000 to 18,000,000 Btu/hr capacity range. — **NIAGARA BLOWER COMPANY.**

146 — Vertical Sump & Process Pumps — 12 page Bulletin 726.2 describes new line of heavy duty vertical centrifugal pumps for wet and dry pits to 20 ft. Single and duplex units. Capacities to 1080 gpm. For regular sump service or wide variety process applications. — **GOULDS PUMPS, INC.**

172—Pressure Fans — For 10" to 50" SP and capacities 200 to 13,000 cfm. Dimensions and capacity tables included in 20 page Catalog 857. — **CLARAGE FAN CO.**

INSTRUMENTS—METERS CONTROLS—REGULATORS

201—Valves & Gages — Handy guide No. 36 gives data and prices on valves, liquid-level gages & accessories for process and power industries. — **PENBERTHY MFG. CO.**

203—Electric Control System — Bulletin E74-1 describes new control system operating over -25 to +25 volts d-c signal ranges. Electrically and electronically operated components are shown along with transmitting and power units. — **BAILEY METER COMPANY.**

207—Control Centers & Systems — Combustion safeguard and automation packaged control centers insure full coordination of complete system, place responsibility on one source, insure correct wiring, and reduce field labor. Catalog C11 illustrates variety of designs and circuits now in use. — **WEBSTER ENGINEERING CO.**

211—Butterfly Valves — Folder supplement to Catalog 307 stresses flexibility in valve line for controlling large volumes of liquids or gases. Valve actuators, special arrangements, shaft extensions, and electric actuators and positioners are featured. — **MASON-NEILAN.**

224—Feedwater Regulator — Bulletin 1044 describes the BI Feedwater Regulator, the single-element unit employing a thermostatic-tube level controller which actuates a regulating valve in feed line. For loads from 10 to 785 psig. Includes specifications table and schematic diagram. — **COPES-VULCAN DIV.**

225—Cooling Controls — Self-powered controls for compressors, stills, solvent coolers, degreasers and small engines are described in Bulletin 710; operational and hook-up sketches. — **SARCO COMPANY INC.**

235—Liquid Level Gauges — Bulletin 463A describes automatic remote reading systems for nearly any liquid. Features include easy to read dial indication. — **LIQUIDOMETER CORP.**

265—High Pressure Water Columns — Brochure BO—Introduction to high pressure (251 to 2500 psi) division of catalog data. Describes construction of higher pressure water columns; gives reference list of gauges and supplementary equipment. — **RELANCE GAUGE COLUMN CO.**

281—Diaphragm Control Valves for accurate control of pressure-temperature, liquid level, etc., described in Catalog J-170. Designed specifically for instrumented process systems requiring linear flow characteristics and tight shut-off. — **OWP-JORDAN.**

287—Color-Port Water Gage — Bulletin WG-1814 describes the new gage for high pressure boilers (up to 3300 psi). Gives full details on design and operation and shows how it gives greater visibility and greatly reduced maintenance requirements. — **YARNALL-WARING COMPANY.**

INFORMATION CENTER



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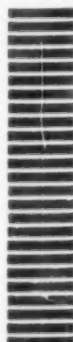
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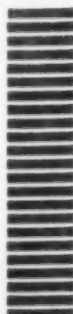
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Atlanta 8, Ga.



Bulletins (Cont.)

PLANT CONSTRUCTION—WELDING EQUIPMENT—SPECIALTIES

300—Buyer's Guide — Up-to-date industrial and maintenance building products stock list. Includes complete listing of all Rasco distributed products plus branch locations. — REYNOLDS ALUMINUM SUPPLY CO.

301—Vacuum Cleaning Systems — How portable and stationary systems cut costs and increase plant efficiency shown in Booklets P8 and AB-100. Eight heavy duty units (1½ to 15 hp) for cleaning hard to get at areas, reclaiming valuable materials. — U. S. HOFFMAN MACH. CORP.

304—Backing Rings — Bulletin 56-2 describes rings designed for fast, economical fit-up in piping, tubing, fittings and valves. Shows how rings assure uniform complete-penetration welds and ease of handling in both shop and field. Carbon steel, wrought iron, chrome alloys, stainless, aluminum and copper—ROBVON BACKING RING COMPANY.

306—Steel Buildings — Shed roof, gable roof frameless and gable roof rigid frame units described in Catalog SX-13757. 5,000 sizes available to meet all space needs. — ARMCO DRAINAGE & METAL PRODUCTS, INC.

315—Pressure Vessels — Catalog 100 discusses plate fabrication problems and shows how company custom-fabricates hot water storage heaters, tanks, air receivers, blow-off tanks. Corrosion resistant linings and materials featured. Suggested specifications and other valuable technical data given. — J. J. FINNIGAN CO.

332—Heat Transfer Equipment — If you have material to liquefy, heat, vaporize, superheat, condense, cool or solidify, check Bulletin HE-8 describing exchangers designed for temperatures as low as minus 160 F and as high as 1600 F with pressures ranging from vacuum to 9500 psi. — HENRY VOGT MACHINE CO.

342—Power Roof Ventilators — Bulletin 550 describes V-belt driven centrifugal type power roof ventilators. Pressures to 2" SP; capacities from 1500 to 26,500 cfm.—CLARAGE FAN CO.

357—Mechanical Lubricators — Various force feed mechanical lubricators, accessories, and components available for lubrication systems described in Bulletin L-60.—MANZEL.

365—Storage Water Heaters — Gas-fired, scale free 230 units described in Bulletin 4. Fully automatic package requires only simple connections. Available in more than 100 storage and recovery combinations. Storage capacities range from 250-4,000 gal. — THE PATTERSON-KELLEY CO.

370—Industrial Fence — You can eliminate pilferage, control traffic, and improve plant appearance most economically with Anchor Chain Link Fences. Catalog gives case studies from other plants in South-Southwest. — ANCHOR FENCE.

383—Crushing Equipment — Bulletins 937, 939, and 949 cover reduction machinery for coal, alum, bones, salt and chemicals. — JEFFREY MANUFACTURING COMPANY.

386—Rigid Frame Buildings—8 page bulletin "Dixisteel Rigid Frame Buildings" — low cost, flexibility of design, durability, and minimum maintenance; also triangular or bow-string truss all-steel roof systems; fabricated for rapid erection. — ATLANTIC STEEL COMPANY.

KEEP UP-TO-DATE USE SPI READER SERVICE

PIPING—VALVES—FITTINGS STEAM SPECIALTIES—TRAPS

407—Piping Materials—Bulletin reports on intensive investigation into problem of main steam piping materials and gives data on stress rupture characteristics of Types 316 and 347 stainless steel piping adjacent to welded joints. — PITTSBURGH PIPING AND EQUIPMENT COMPANY.

409—Lubricated Plug Valves—Catalog PV-4 covers operational features. Quarter-turn to open or close; lubricant grooves provide positive seal when valve is closed; when open, seating surfaces not exposed. —THE WM. POWELL COMPANY.

410—Flexible Connectors—How all-metal connectors absorb piping vibration described in Catalog 1D-100C. Convey corrosives, simplify misaligned hookups, and save installation time. Bronze, carbon steel and stainless steel. — UNIVERSAL METAL HOSE CO.

411—Steam Trap Book — 48 page manual reviews importance of good trapping. Gives complete data on traps and strainers. Contains complete selection, installation, testing and maintenance information. Many useful tables and charts. — ARMSTRONG MACHINE WORKS.

414—Acid Resistant Pipe — 4 page technical brochure covers properties of Union 20-S stainless steel. Alloy can be welded and put into service without subsequent annealing. Shows comparative resistance to 94 different corrosive agents.—REYNOLDS ALUMINUM SUPPLY CO. —UNION STEEL CORP.

429—Expansion Joints — Advantages of the Gun-Pakt expansion joint described in Bulletin EJ-1917. No shutdowns for repacking. Installation suggestions. — YARNALL-WARING COMPANY.

443—PVC Fittings & Flanges—Corrosion resistant polyvinyl chloride pipe fittings and flanges covered in 12 page catalog, featuring characteristics, advantages, limitations, operating pressures, temperatures and field tests. —GRINNELL COMPANY, INC.

458—Stainless Valves—Catalog gives complete technical data on stainless steel valves for all purposes. Over 100 valves diagrammed and described. — REYNOLDS ALUMINUM SUPPLY CO.—COOPER ALLOY CORP.

488—Power Piping Field Erection — Increased importance of piping erection proficiency is stressed in new 12-page brochure. Tells how field-erection costs and quality are controlled and discusses welding and other technical aspects.—THE M. W. KELLOGG COMPANY.

493—Unions & Valves — Complete company line of pipe unions and check valves covered in Catalog 56. New Four-Star lug nut unions and spring controlled check valves included. CATAWISSA VALVE & FITTINGS COMPANY.

BOILERS—STOKERS TURBINES—BURNERS

501—Packaged Steam Generators — DK units described in bulletin: 24 sizes for gas, oil or combination firing in capacities up to 60,000 lb/hr, with design pressures up to 600 psi. Special package boilers up to 100,000 lb/hr and field erected units up to 200,000 lb/hr for all fuels and all types of firing are featured. — E. KEELER COMPANY.

502—Feedwater Treatment — 4 page catalog tells how Braxton and Flako internally condition water to remove and prevent scale formation and corrosion in boilers. — ANDERSON CHEMICAL COMPANY.

505—Refractories — Paco High Heat Duty and Super Duty Plastic Refractories. Fire Brick, high temperature cement, castables. Installation and engineering service. Free estimates and inspection. — NORTH STATE PYROPHYLLITE CO.

506—Packaged Boilers—35 models from 15 to 600 hp featured in Bulletin 400. Integral burner system for oil, gas or combination fuels is illustrated. Special section covers hot water applications. — BOILER ENGINEERING & SUPPLY CO. INC.

509—Free Coal Counseling — General information on how Coal Bureau engineers will advise on selection, transportation and utilization of the right coal for your purpose.—NORFOLK AND WESTERN RAILWAY.

Bulletins (Cont.)

516—Small Boiler Performance —

4 page bulletin shows how the packaged Ljungstrom air preheater boosts performance. Boilers as small as 25,000 lb/hr can have advantages of regenerative preheating — saves fuel, boosts output, and permits use of lower grade fuels. — THE AIR PREHEATER CORPORATION.

520—Perfect Spread Stoker—Com-

pact, automatic coal firing unit in sizes from 175 hp to 350,000 lb of steam per hour and upward; top efficiency with both low and high ash coals; exclusive conveyor feeder that won't clog, and provides even distribution and continuous feeding. —AMERICAN ENGINEERING CO.

532—Economical Steam — Forced

draft, pressurized gas or oil fired units described in SB-59 catalog. Two-drum water tube units include steam trim, draft equipment, burner and combustion safety controls. — ERIE CITY IRON WORKS.

539—Industrial Burners — How to

keep heating costs low with Hev-E-Oil commercial-industrial burners described in bulletin SPI-859. Models from 5 to 150 gph; automatic, electronic controls; Hev-E-Duty power gas burners and combination gas/oil burners from 720,000 to 21,000,000 Btu. — INDUSTRIAL COMBUSTION, INC.

549—Firing Systems — Folder No.

5843 describes industrial packaged forced-draft firing systems for dual-fuel or single-fuel firing of high or low pressure natural, LP or manufactured gas or any grade of oil from No. 2 through No. 6 in Scotch marine, steel firebox, water tube or cast iron boilers. — IRON FIREMAN MFG. CO.

551—Packaged Water Tube Boilers

—Complete data and dimensions for boilers ranging from 8,000 to 50,000 lb/hr, firing oil or gas or both, described in 12 page Catalog 111-D. — SUPERIOR COMBUSTION INDUSTRIES, INC.

553—Boiler Start-Up—Bulletin 1048

describes a moving temperature probe which patrols critical boiler gas passages and gives adequate warning of incipient hot spots during lighting off. Includes structural details and specifications of probe as well as explanations of the operating features and methods of control. — COPES-VULCAN DIVISION.

563—Burn Refuse Fuels — Bulletin

510 describes and illustrates spreader stokers for utilizing many refuse and by-product waste materials as fuel to produce steam for process, power or heating use.—DETROIT STOKER COMPANY.

574—Packaged Generator — Bulletin

582 describes Vapormatic Coil-N-Shell Steam Generator for service requirements of 5 to 150 psig. Gives operation features and specification data. Available with gas, oil, and combination gas/oil fuel systems. — TEXSTEAM CORP.

590—Packaged Rotary Burner—Full-

ly automatic Roto-Pack forced draft units described in Bulletin; 6 sizes, 7 types to fit all automatically fired boilers or furnaces. Burn all grades of fuel oils, gaseous fuels or combination of both — TODD SHIPYARDS CORPORATION.

ENGINES—DRIVES POWER TRANSMISSION MATERIAL HANDLING

600—Mechanical Shaft Seals—Chem-

pro mechanical external seal described in Bulletin CP-551. First seal designed for complete interchangeability with packing. No mounting clamps, machinery stuffing box faces or drilling holes. Install in 30 min. Adjust after installation. —CHEMICAL & POWER PRODUCTS, INC.

606—Retaining Ring Kits — 400

Truarc cadmium plated rings — 84 sizes in one economy kit. Sizes from 1/4 to 2 1/2 in. in three most used series of internal, external and universal crescent ring designs — \$34.50 per kit. — DIXIE BEARINGS, INC.

KEEP UP-TO-DATE USE SPI READER SERVICE

See pages 85 & 86

610—Flexible Couplings — Catalog

60 describes couplings for maintenance-free power transmission — no lubrication, no maintenance and no wearing parts. Recommended basic coupling arrangements and load classifications are featured.—THOMAS FLEXIBLE COUPLING COMPANY.

614—Vertical Transportation — Cat-

alog A-382 describes and illustrates details of passenger and freight elevators and escalators for use in all types of industrial plants. — OTIS ELEVATOR CO.

615—Dial Scales — Catalog gives

specifications on dozens of standard and special types for industry. Accessories for printed weight records, remote weight indications, etc. — THE HOWE SCALE CO.

618—Casters & Wheels — Featuring

"Lockweld" steel casters without a king-pin, Cat. C-57 describes full line of industrial wheels manufactured and distributed from Rome, Ga. plant. — THE FAIRBANKS CO.

635—Bearings & Bars — Pocket size

edition 158 gives complete list of cast bronze and sintered bronze bearings and bars. Bearing aluminum bar data included.—THE BUNTING BRASS AND BRONZE COMPANY.

WATER TREATMENT—HEATING & AIR CONDITIONING—DUST & FUME CONTROL—REFRIGERATION

700—Peak Load Problems? — Keep

your air conditioning and refrigeration systems operating at maximum efficiency during peak load months. Catalog tells how Anco treatment removes rust and scale and kills slime and algae in equipment. — ANDERSON CHEMICAL COMPANY.

701—Exhausting Corrosive Fumes—

Bulletin 702-A shows how corrosive fumes can be exhausted with rubber, lead lined or specially coated fans. — CLARAGE FAN CO.

702—Water Conditioning — Bulletin

611C, 20 pages, describes manual and automatic softeners, zeolites and ion exchange resins, mixed-bed and multi-column deionizers, dealkalizers, ion exchange systems, filters and purifiers, and water treating chemicals. — ELGIN SOFTENER CORPORATION.

716—Dust Collection—Whether nuisance

elimination or process material recovery, check on Whirlx Dust Collector Units. Engineering data available. — THE FLY ASH ARRESTOR CORP.

722—Automatic De-Ionizers — Bul-

letin E-259 covers automatic control systems for ion-exchange equipment, with descriptive text and photos.—ILLINOIS WATER TREATMENT COMPANY.

723—Fly Ash Collection — Catalog

103 tells how "Double Eddy" goes to work to increase boiler fly ash collection. Buel Cyclones will not clog or plug even with loadings up to one pound of ash per cu ft of gas. — BUELL ENGINEERING COMPANY, INC.

726—Filters — Automatic valveless

gravity filter described in 8-page Bulletin 4351. Includes design features and installation details.—PERMUTIT.

746—Clarifiers—Wide variety of im-

purities in water supplies can be most economically removed by chemical precipitation and coagulation. Bulletin CL-260 tells how the Illico-Way unit carries out these processes efficiently and in minimum space. —ILLINOIS WATER TREATMENT COMPANY.

755—Cooling Tower — Bulletin

DVAQ describes the double-flow Aquatower for industrial services involving intermediate-gallons. Space saving line in wood or steel structure with asbestos cement board casing, in single or multicell units. — THE MARLEY COMPANY.

761—Water Treatment Equipment—

Aeration, degasifiers, chemical feeders, precipitation equipment, filters and ion exchange equipment described in Bulletin 4447. Simplex meters, flow controllers, and air valves included. — PERMUTIT.

771—Water Treatment — 4 page brochure points out company's 8-point water treatment coverage for elimination of scale, sludge, corrosion and impure steam. — IPCO LABORATORIES, INC.

774—Refrigerating Units. — Bulletin 97-F illustrates and describes low-pressure refrigerating units. — FRICK CO.

**SPI—SEPTEMBER—'60
ELECTRICAL SERVICE AIDS
for the Man-in-the-Plant**

807—Motor Bearings — Catalog 258 gives complete listing of cast bronze motor bearings for all makes and sizes. — THE BUNTING BRASS AND BRONZE COMPANY.

813—600-Volt Wiring — How Anaconda Densheath 900 offers long life, high heat and moisture resistance, chemical stability and easy installation is described in Bulletin DM-5612 — ANACONDA WIRE & CABLE CORP.

816—High Voltage Protection — 36 page catalog of linemen's protective equipment describes products for utility and industrial electrical fields. — CHARLESTON RUBBER COMPANY.

820—Electrical Maintenance — New contract service (for Southeast only) inspects and tests motors, generators, gearing, control and distribution systems at a cost less than 1% of value of equipment. — Atlanta Office of WESTINGHOUSE ELECTRIC.

874—High Voltage Rubber Cables — 32 page catalog contains information on design features, insulations available, and performance highlights of company's butyl rubber power cable, Densheath. Also data on kinds of available constructions from 600 v to 15,000 v conductors. — ANACONDA WIRE & CABLE CO.

871—Electrical Protection — Handbook tells how to select protective devices for circuits, motors and apparatus. Condenses all '59 Code references covering protection problems. Explains how installation costs can be cut and space saved with Dual-Element fuses. — BUSSMANN MFG. DIV.

877—Motor & Commutator Maintenance — Line of resurfacers, flexible abrasives, grinders, brush seaters, undercutters and other tools described in Motor Maintenance Products catalog. — IDEAL INDUSTRIES, INC.

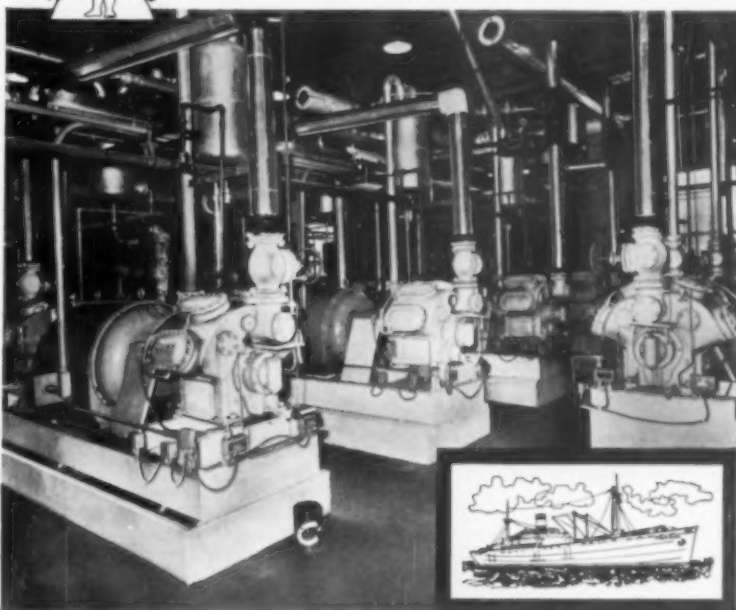
880—Electrical Test Kit — Amprobe literature describes Test-Master Kit — all equipment you need for electrical testing jobs. — PYRAMID INSTRUMENT CORP.

885—Electrical Maintenance — File 21 tells you how to set up good electrical testing program — insulation resistance testing, motor and phase testing, cable fault location. — JAMES G. BIDDLE CO.

Breakfast orange juice fresh from Florida, thanks to Vilter



Tropicana Products—world's largest producer of chilled citrus and fruit juices.



View of Vilter VMC compressors installed in the Tropicana Products Plant at Port Canaveral, Florida. Inset shows the S.S. Tropicana which carries 1,500,000 gallons of chilled orange juice every eight days between Port Canaveral and New York.

The high consumer acceptance of Tropicana's orange juice is the result of a special processing and storing method. This makes possible the year-round delivery of chilled full-flavored, vitamin-rich, orange juice over Tropicana's entire marketing area.

One key to their success is the reliable refrigeration supplied by Vilter for cooling and processing fresh juices at their various plants. Vilter equipment, at Port Canaveral, for instance, includes 16 VMC compressors, and Vilter ammonia liquid intercoolers and ethylene glycol chillers. The entire Vilter refrigeration system functions smoothly and efficiently to handle Tropicana's large daily requirements of many thousands of gallons. Refrigerated storage facilities hold 3,000,000 gallons at Port Canaveral.

The dependable operation and efficient performance of Vilter VMC compressors is the result of continuing engineering improvements: protection against refrigerant slugs, built-in capacity reduction, precision manufacturing and factory-run-in tests.

For help with your refrigeration problem, why not call on your nearest Vilter Distributor?

Sold and installed by Vilter Distributor, W. L. Filbert, Miami, Florida



Air Units • Ammonia and Freon Compressors • Booster Compressors
Baudelot Coolers • Water and Brine Coolers • Blast Freezers
Evaporative and Shell and Tube Condensers • Pipe Coils
Valves and Fittings • Pakice and Polarflake Ice machines.



Write for Bulletin 817 to The Vilter Manufacturing Company, Dept. SP-901, 2217 South First Street Milwaukee 7, Wisconsin

Late Bulletins

J-17—Valves — Catalog FE-138, 28 pages, covers complete line of liquid relief and special service safety-relief valves for hydraulic pressure systems, liquified gases, chemical corrosive service and general industrial use. Capacity tables, application data, and other pertinent features are arranged to simplify valve selection. — FARRIS ENGINEERING CORPORATION, 630 Commercial Ave., Palisades Park, N. J.

J-18—Mechanical Seals — Bulletin AD-150, 8 pages, describes the engineering and application of compact, ready-to-install Mechanipak seals. Outlines temperature, pressure, shaft speed and other operating information necessary when selecting or utilizing mechanical sealing devices. Includes tables and illustrations. — GARLOCK INC., 446 Main St., Palmyra, N. Y.

J-19—Thermal Insulation — Bulletin J-661, 4 pages, presents thermal and acoustical characteristics of "Fine-Fyber Felt," a lightweight insulating material designed for service from sub-zero to 450 F. Photographs of actual applications illustrate the ease of installation. — BALDWIN-EHRET-HILL, INC., 500 Breunig Ave., Trenton, N. J.

J-20—Cooling Water Treatment — Bulletin CSP-935, 4 pages, describes Hagatreat No. 168, which is said to be a new concept in cooling water treatment, providing complete corrosion control, elimination of sludge disposition, more concentration of make-up water, and simplified control procedures. — CALGON COMPANY, Hagan Center, Pittsburgh 30, Pa.

J-21—Exterior Coating — Data Sheet (Form 6466) describes Perco-proof Coating for economical, damp-resistant coating of exterior surfaces below grade — a refined coal tar bitumen combined with specially selected coal tar solvents. Covers surface preparation, application methods, and other pertinent data. — PHILIP CAREY MFG. COMPANY, 320 S. Wayne Ave., Cincinnati 15, Ohio.

J-22—Fabric Dust Collector — Bulletin 279C, 8 pages, presents the new Model B Amerjet reverse jet fabric dust collector to reclaim materials in a dry state, featuring low initial cost and minimum maintenance performance. Explains construction and operation. — AMERICAN AIR FILTER COMPANY, INC., 215 Central Ave., Louisville 8, Ky.

J-23—Valve for Abrasive Slurries — Bulletin 2V-60, 4 pages, describes valve for abrasive slurry applications, which can be installed in any position and has no slots or guides interfering with valve movement as well as reducing maintenance to a minimum since there are no sliding metal-to-metal parts. — UNITED CONVEYOR CORPORATION, 6505 North Ridge Blvd., Chicago 26, Ill.

J-24—Water Conditioning — Data Sheet, 2 pages, "How to Extend Cooling Tower Life," discusses how deterioration of cooling tower wood by chemical, biological and physical factors shortens the life of cooling towers. — BETZ LABORATORIES, INC., Gillingham & Worth Sts., Philadelphia 24, Pa.

J-25—Fuel Burning Systems — Bulletin No. 1270 shows burner designs for oil, gas or combination oil/gas fuels — completely packaged units with control cabinet, oil preheater, air compressor, oil pump and burner plenum mounted on welded base. — ORR & SEMBOWER, Reading, Pa.

J-26—Hydraulic Spray — Bulletin 404R, 4 pages, describes new airless hydraulic Dyna-Spray equipment and accessories. Contains specifications on four units, any of which can be used for industrial maintenance or production painting. — LINCOLN ENGINEERING COMPANY, St. Louis 20, Mo.

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News of the South-Southwest

(Continued from Page 83)

Yuba Buys Anderson—Tulsa

Yuba Consolidated Industries, Inc. has purchased the K. W. Anderson Company of Tulsa, Oklahoma, manufacturers of high temperature furnaces for processing industries.

The Anderson Company is being consolidated with the Petro-Chem Development Division of Yuba because their products and markets are compatible. Sales activities of the combined organizations will have headquarters at Tulsa, Oklahoma. Petro-Chem Development Division for the time being will maintain design, engineering and manufacturing activities in both its Houston, Texas plant and the Anderson facility in Tulsa.

Kenneth W. Anderson formerly president of the K. W. Anderson Company, will be Vice-President and General Manager of the Petro-Chem Development Division of Yuba.

The Anderson facility is located on a 4½-acre site in Tulsa and is fully equipped for the manufacture of heater assemblies.

Wheelabrator — S.E.

Willard P. Burdakin has joined **Wheelabrator Corporation**, Dust and Fume Control Division, and has been assigned to a seven-state territory including North Carolina, South Carolina, Georgia, Tennessee, Mississippi, Alabama, and Florida. He will serve as sales engineer, operating from the Birmingham office, 8436 1st Avenue North.



Prior to joining Wheelabrator, Mr. Burdakin was with Koppers Company, Inc. as an electrostatic precipitator sales engineer servicing a similar Southern territory. He is a graduate of Virginia Polytechnic Institute and holds a bachelor's degree in mechanical engineering.

New Plastics Firm—Fla.

Russell, Burdsall & Ward Bolt and Nut Company, Port Chester, N. Y., and Modern Designers, Hialeah, Fla., have affiliated to form **Industrial Plastic Molders, Inc.**, to manufacture injection molded plastic parts. RB&W holds controlling interest in the new company, successor to Modern Designers.

The firm will specialize in volume production of plastic parts with rigid specifications for mechanical applications. Delrin, Nylon, Teflon and styrene plastics will be utilized, and the company will also design and make custom molds for injection molding. High speed automatic molding machines have been installed and manufacturing operations are under way at the Hialeah plant.

Martin Dawson, former head of Modern Designers, is president of Industrial Plastic Molders, Inc., located at 680 West 18th St., Hialeah.

Fox Buys F & P Steel

Joseph H. Fox & Co., Inc., of Birmingham, Alabama has purchased the controlling interest in **F & P Steel Pipe Corporation** of Jacksonville, Florida, for an undisclosed price. F & P Steel Pipe, with assets valued in excess of \$1,000,000, produces steel pipe 4" through 14" in diameter for use in the transmission and distribution of gas, oil and water as well as for structural purposes.

Joseph H. Fox, president of the Fox Companies, continues as president of F & P Steel Pipe and with the purchase now owns and controls 100% of the company. Robert C. Crumbaugh, Jr., of the Fox Companies is now Executive Vice-President of F & P.

Multi-Amp — Okla.

Multi-Amp Electronic Corporation, Union, New Jersey has appointed C. B. Anderson Electric Co., 712 Oil Capital Building, Tulsa, Oklahoma, to serve Oklahoma, the Panhandle and southwestern area of Texas, western Arkansas, and southern Kansas, as manufacturer's representatives to handle high-current, low-voltage test units for circuit breakers, relays, reclosers, fuse links and transformers and other Multi-Amp equipment.

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Transformer capacities up to 400,000-KVA . . . Nuclear Reactors . . . Once-Through Boilers to handle higher pressures—all point to one thing: the demand for even better power equipment. Record economic forecasts mean even greater responsibilities and demands on the men who will grow with the power boom.

Keeping up-to-date with the latest developments provides you with the information you need to know to grow. That's why the Power Show is so vitally important to you. There you will see up-to-the-minute developments in hundreds of power specialties widely used in the power industry.

Only at the Show will you have the opportunity to investigate, compare, and get the right answers, face-to-face, from the manufacturers themselves. At the Power Show you'll see more than 250 suppliers' products, all conveniently grouped together.

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Specify Palmetto!—Pure Teflon yarn gives exceptional chemical resistance and lubricating qualities. Packing is supplied in Palmetto's dense but flexible "interwoven" form for use on pumps and valves. Furnished plain or impregnated with Teflon suspension.

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GREENE, TWEED & CO.
NORTH WALES, PA.

Southern News Briefs (Continued)

Wolf Opens Atlanta Office

Wolf Management Engineering Company has opened an Atlanta office in the Tingle Building, 1627 Peachtree St., N. E. The company offers services of management engineering specialists in the problems confronting business and industrial executives. Charles S. Dudley heads the new office as Resident Associate.

Allis-Chalmers — Fla.

ABCO Sales Company, Inc., 5129 East 10th Avenue, Hialeah, Florida, has been appointed a distributor for **Allis-Chalmers** sodium zeolite water softeners and packaged deaerators in southern Florida.

Robert E. Sayre is president, and Richard Bibergall, sales manager, of ABCO.

Southern Airways — Ga.

William R. Scaife, formerly with Robert and Company Associates, Atlanta architectural and engineering firm, has joined **Southern Airways**, Atlanta, Ga., as Facilities Supervisor.

In his newly created position, Mr. Scaife will be responsible for the engineering, design and construction of **Southern Airways'** facilities in the nine-state area which the airline serves. In addition, he will serve as technical representative of Southern Airways on joint airline building and construction projects.

Wayne Kerr — Texas

Wayne Kerr Corporation, Philadelphia, designer and producer of electronic measuring instruments, recently appointed **Airep Engineering Co.**, P. O. Box 9555, Dallas 14, as its new manufacturer's representative for Texas, Arkansas, Oklahoma, and Louisiana.

G-E Insulator Dept. — Md.

The Insulator Department, General Electric Company, Baltimore, Maryland, has appointed H. M. Carmichael and T. E. Traugott Zone Sales Managers.

Mr. Carmichael, with headquarters in Atlanta, Georgia, will manage a sales zone which includes Atlanta, Baltimore, Birmingham, Charlotte, and Saint Louis. Mr. Carmichael has appointed R. D. Hilley, Jr., district

manager of the new Birmingham sales district serving Alabama, Louisiana, Mississippi, and the northwestern portion of Florida.

Mr. Traugott will head the sales zone which includes Dallas and Kansas City, with headquarters in Burlingame, California.

Gregory — Birmingham

Appointment of Clarence F. Boggan as manager of Construction Fastener Sales in the Birmingham regional office of **Gregory Industries, Inc.**, is announced by Robert D. McCahan, regional manager.



Mr. Boggan has had broad experience in the fastening field as vice-president of the Brady Company, prominent Birmingham supplier of construction and maintenance equipment. In his new position, he will specialize in Gregory's Nelson powder-actuated stud drivers and Bulldog self-drilling concrete anchors.

New Chance Vought Electronics Plant — Tex.

The Electronics Division of **Chance Vought** will establish a new \$3,500,000 facility in the Great Southwest industrial district between Dallas and Fort Worth. Construction of a \$1,500,000, ultra-modern, air conditioned building with 80,000 square feet of floor space is under way. The building, plus special equipment valued at approximately \$2,000,000, will give the division one of the most complete electronics facilities in the Southwest.

The division will occupy its new quarters around the first of the year, under a long-term lease agreement with Great Southwest Corporation. Electronics currently shares space in Chance Vought's main plant at Dallas with the company's Aeronautics, Astronautics and Research Divisions.

The move will provide the division with facilities and an environment tailored specifically for the highly-exacting field of electronics systems production and enable it to operate more efficiently and at lower cost.

Benjamin H. Ciscel, general manager of the Electronics Division, said that at the time of the move the division will become an autonomous organization operationally independent of the parent organization. He said the new building will represent the first step in a program which anticipates expansion into a 175,000-square foot facility in the next few years.

Housed in the new plant will be engineering facilities, assembly and manufacturing areas and administrative offices. Also included will be five laboratories, all with the latest equipment.

SESCO Description — Continued from page 41

Where ambients exceed 40 C, silicone insulated cables are used. In general, cables through size #2/0 have copper conductors and those above employ aluminum conductors. All 4160 and 600 volt power cables are installed in conduits. The 208 volt power and control circuits are installed, where possible, in cable trays.

Communications

The basic plant communication system is an automatic dial type telephone exchange with 46 lines initially connected and with provisions for expanding to 100 lines. This system covers the entire plant area. Instantaneous communication supplementing the telephone system is provided in the operating areas by a completely transistorized public address system.

Trouble Analysis

In addition to complete annunciator equipment for instantaneous trouble indication, a high speed sequential operation recorder is provided for more accurate post-mortem analysis of plant and system disturbances. Initially this equipment will record 22 points for the substation and 52 points for the boilers and turbines of each unit, but it can be expanded to 400 points.

An automatic oscillograph is installed to monitor 14 points of 230 kv lines operation, and it can

Norton Company — Ga.

Norton Company announces appointment of J. Robert Lowry, as field engineer in the Atlanta, Georgia district. Mr. Lowry joined the company as sales trainee last year.

Chain Belt — Atlanta

William E. Carter recently joined Chain Belt Company, 1788 Ellsworth Industrial Drive, N.W., Atlanta, Ga., as a district sales representative. Mr. Carter is a graduate of Huntington College and the University of Alabama. He has had several years of sales experience in the power transmission and conveying field in the South.

be expanded to 32 points. It is expected that this equipment will determine performance of the 230 kv lines and assist in analyzing system disturbances involving the SESCO turbo-generating units. In earlier months of plant operation, certain elements will be used to monitor fault currents.

Plant Lighting

Basic plant lighting is predominantly by fluorescent industrial fixtures having a 25% upward component. But where mounting height exceeds 16'-0" mercury vapor fixtures are used; and where ambient temperature exceeds 105 F incandescent fixtures are used. Incandescent fixtures are also used on stairways because of mounting conditions and because some of these lights connect to the station battery in emergencies. Mercury vapor lighting is used in such outdoor locations as the substation, the induced fan area, and at the deareator.

The level of illumination in the control rooms is 100 foot-candles, turbine room 30 foot-candles, and general indoor plant areas 20 foot-candles.

The plant output is switched to three 230 kv transmission lines, two to Georgia Power Company, and one to Alabama Power Company. The switching station will be described in a separate article in a coming issue of SPI.

DON'T OVERLOOK

STEAM SPECIALTIES



If you believe that it's often the little things that count, you will pay attention to such items as steam specialties. Often used in large volume, their performance can contribute substantially to profit or loss in your company's operations.

You will see at the Power Show such steam specialties as steam traps, strainers and separators, steam cleaners, controllers and regulators, temperature and pressure instruments, indicating and recording devices, as well as a complete range of power and allied equipment ready for your inspection.

Here is your opportunity to investigate, compare, and get the right answers, face-to-face, from the manufacturers themselves. Only at the Power Show can you see over 250 leading suppliers' products, all conveniently grouped together.

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NEW YORK COLISEUM
NOV. 28 — DEC. 2, 1960

MANAGEMENT, INTERNATIONAL EXPOSITION COMPANY
480 Lexington Ave., New York 17, N. Y.

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It's Horse Sense . . . Why Chance Leaks in Seat Rings

*Get Monel Seat BRONZE GATES
made the way JENKINS makes them*

It's plain horse sense that you had better have the Monel seat rings EXPANDED (ROLLED) into the valve body if you want them to stay tight and leak-proof.

More horse sense . . . there's nothing valuable lost through having seat rings that can't be replaced by a regular maintenance man . . . **IF** the bronze or nickel alloy wedge has a lower degree of hardness than the heat-treated Monel seat rings. (*The way Jenkins makes them*) Then, the wedge takes the wear and seat rings are relatively unaffected.

Obviously, there's no faster, simpler or cheaper way to renew tightness and efficiency than to slip on a new wedge. And that, plus renewal of packing as needed, is all you need do to assure good performance from Jenkins Monel Seat Bronze Gates for as long as you'll need to care. Good service for scores of years is common.

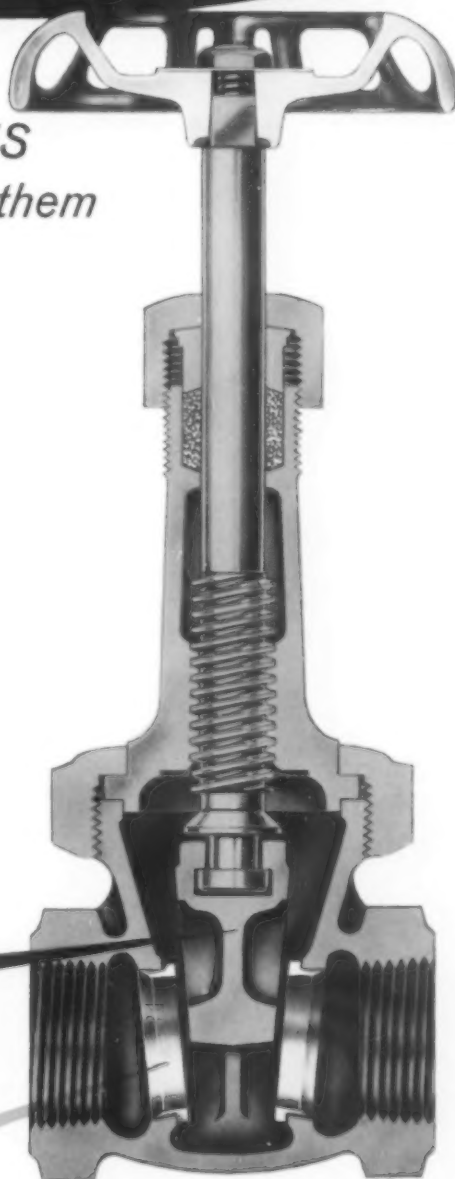
Long, low-cost life also results from greater-than-ever-needed strength in every part of these valves. The records of millions of Jenkins Bronze Gates show you get full protection against all the stresses encountered in use.

Your local Jenkins Distributor will quickly supply your needs from a wide variety of Jenkins Bronze Gates. For information about these valves, write for folder No. 181-C. Jenkins Bros., 100 Park Ave., New York 17.

WEDGE is less hard
than seat rings.
Wear affects
this easily
replaceable part
... NOT seat rings



SEAT RINGS are
expanded (rolled) into
body. Permanent,
all-around support is
essential to prevent
deforming, loosening,
shifting, LEAKS

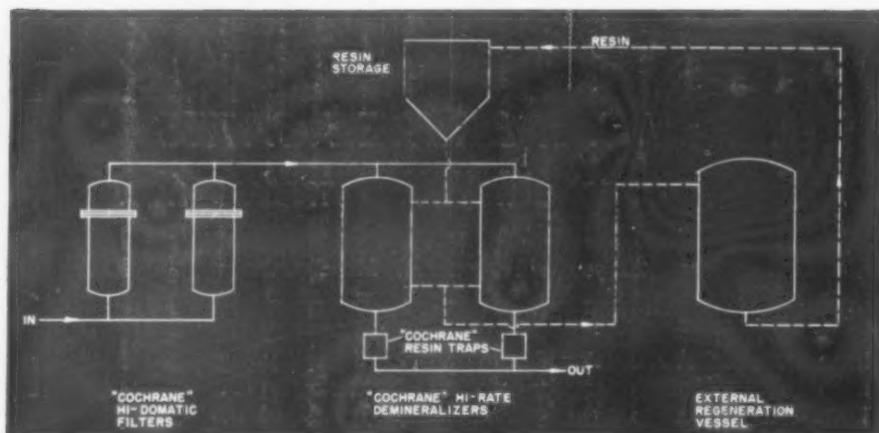


JENKINS
LOOK FOR THE JENKINS DIAMOND
VALVES



Sold Through Leading Distributors Everywhere

CONDENSATE SCAVENGER FILTER-DEMINERALIZERS



Typical Flow Diagram

Cochrane has pioneered the development of condensate scavenger demineralizers for high pressure boilers, including auxiliary resin transport and external regeneration equipment.

In addition to extensive experience in this relatively new area of water treatment, Cochrane offers the advantages of single responsibility and integrated design and manufacture. The complete scavenger system is Cochrane-designed and fabricated, including:

- HI-DOMATIC tubular septum precoat filters.
- High rate mixed bed demineralizers.
- Resin Traps.
- Resin transport system with special overhead resin storage.
- External regeneration units.

RECENT COCHRANE CONDENSATE SCAVENGER PLANT SYSTEMS

	Location	Boiler Pressure psi	Boiler Evapor- ation lbs/hr.
Government Agency	Tennessee	nuclear	nuclear
Public Utility	Ohio	3500	1,250,000
Utility	Genoa, Italy	2000	1,000,000
Government Utility	Alabama	2400	2,450,000
Utility	Levante, Italy	2700	1,000,000
Utility (Repeat Order)	Levante, Italy	2700	1,000,000
Public Utility	New Jersey	2400	2,350,000

Write for further information on Cochrane condensate scavenger systems.

Demineralizers • Zeolite Softeners • Hot Process Softeners • Hot Lime Zeolite Softeners • Dealkalizers • Reactors • Generators
Pressure Filters • Continuous Blowoff Systems • Condensate Return Systems • Steam Specialties

